SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2579.—VOL. LV. LONDON, SATURDAY, JANUARY 24, 1885. PRICE (WITH THE JOURNAL) SIXPENCE BY POST £1 4s. PER ANNUM.

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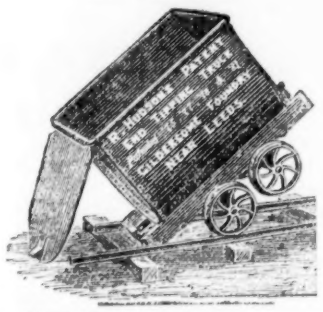
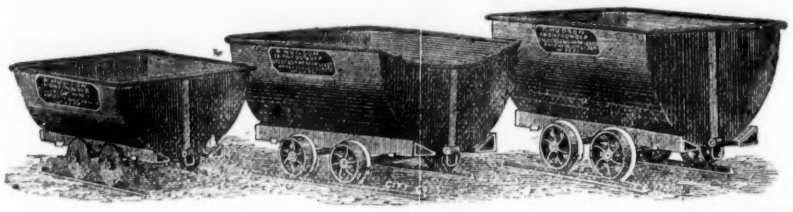
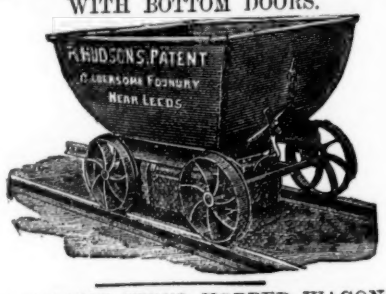


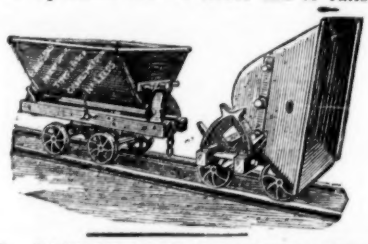
7.—PATENT STEEL MINING WAGONS.



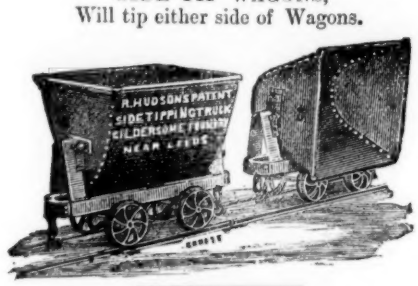
12.—PATENT STEEL HOPPER WAGON, WITH BOTTOM DOORS.



2. PATENT UNIVERSAL TRIPLE-CENTRE STEEL TIPPING TRUCK,
Will tip either SIDE or either END of rails.



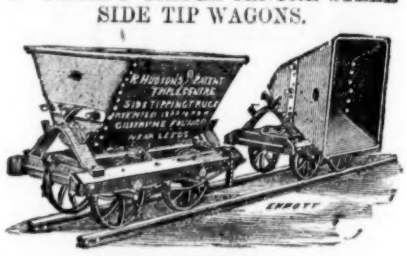
8.- PATENT DOUBLE-CENTRE STEEL SIDE TIP WAGONS,
Will tip either side of Wagons.



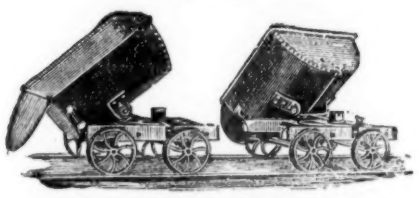
13.—PATENT STEEL HOPPER WAGON.

One man can EASILY tip ANY WEIGHT in these wagons.

3.—PATENT TRIPLE-CENTRE STEEL SIDE TIP WAGONS.

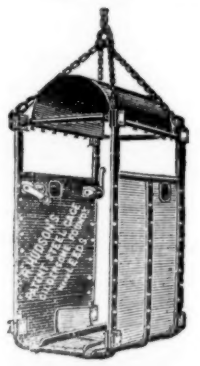


9.—PATENT STEEL ALL-ROUND TIP WAGON.



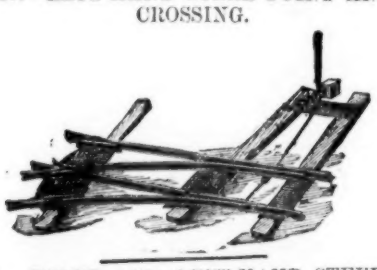
14.—SELF-RIGHTING STEEL TIP BUCKET.
(The "CATCH" can also be made SELF-ACTING if desired.)

15.—STEEL CAGE.

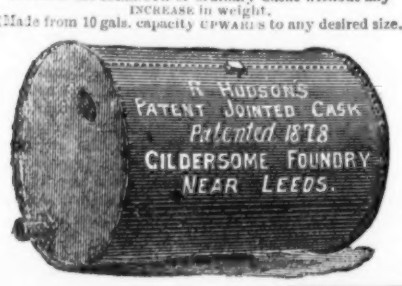


4. -PATENT STEEL PLATFORM OR SUGAR CANE WAGON.

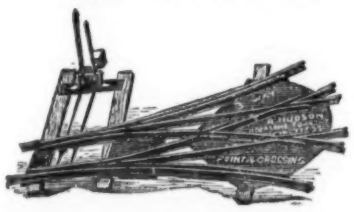
10.—LEFT-HAND STEEL POINT AND CROSSING.



5.—PATENT STEEL CASK.
As supplied to H.M. War Office for the late war in Egypt).
DOUBLE the STRENGTH of ordinary Casks without any INCREASE in weight.
(Made from 10 gals. capacity UPWARDS to any desired size.)



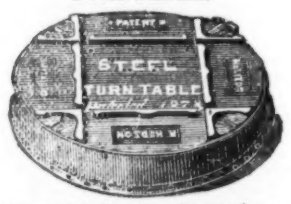
11.—RIGHT AND LEFT-HAND STEEL POINT AND CROSSING.



16.—PATENT STEEL WHEELBARROWS.
Made to any Size.
Lightest and Strongest in the Market.

A great success.

17.—STEEL SELF-CONTAINED TURNTABLE.



(Also made in CAST Iron for use where weight is not a consideration.

6.—ROBERT HUDSON'S
PATENT IMPROVED IRON SMITH'S HEARTH,
NO BRICKWORK REQUIRED.
A Special quality made almost entirely in STEEL, effecting a GREAT SAVING IN WEIGHT.

Large numbers in use by all the principal Engineers in this country and abroad.

18.—"AERIAL" STEEL WINDING TUB.

Largely employed in the South African Diamond Fields.

No. 19.—PATENT STEEL CHARGING BARROW,
DOUBLE the STRENGTH & much LIGHTER than ordinary Barrow

ALL KINDS OF BOLTS NUTS, AND RIVETS MADE TO ORDER ON THE PREMISES

DETERMINING THE SPECIFIC GRAVITY OF COKE.

An interesting account of a rapid and simple method has been adopted for determining the specific gravity of coke, and also the relative volumes of coke substance and pore spaces in any given sample. No novelty is claimed for the principles involved in the method, which is, however, recommended as very rapid and easy, and, when proper care is taken, quite satisfactory as to accuracy. A fair average sample of the coke is carefully taken, and then of this sample two separate portions are prepared, one being reduced to fine powder and the other being taken in small pieces of about 10 mm. (2·5 in.) diameter. The powder may be called No. 1, and the small pieces No. 2. Equal weights—say, 25 to 50 gram. of each portion—are then weighed off, and that from No. 2 is placed in a beaker and covered over with alcohol, benzole, or other suitable fluid, the object of which is to completely moisten and permeate the coke as speedily as possible. Alcohol, though not as rapid in its actions as benzole or one or two other fluids, is finally recommended as quite quite efficient, and cheaper and pleasanter to work with. The beaker is placed on a water bath, and the alcohol made to boil for a few minutes, after which the beaker is placed aside to cool down to 15°. By this treatment the coke is completely moistened, and all its pore spaces are filled up by the alcohol. The apparatus which is used for measuring volumes consists of a small flask of a capacity of 100 c. cm., rather tall and narrow, and of not too thin glass, the neck of which is continued in a glass tube of about 12 to 13 mm. bore, long enough to contain 100 c. cm., and graduated from the bottom upward in centimetres and tenths of centimetres. This apparatus is filled with alcohol (or other fluid used) up to a point a little above zero on the scale of the tube, a cork is inserted to prevent evaporation, and the flask and tube then immersed in water in a glass cylinder, the water being kept as nearly at a temperature of 15° as possible. In a few minutes the height of the fluid in the tube is read off on the scale as accurately as possible. If a piece of black paper is held between the tube, and all readings are made on the lowest point of the meniscus, 1·10 cm. can be accurately measured.

The weighed sample of powdered coke, No. 1, is now carefully introduced into the fluid in the tube by means of a funnel; the funnel is cleared of all adherent particles, and after the cork is again inserted the apparatus is gently shaken till all coke powder settles in the fluid. After again cooling the apparatus to 15° C., the height of the column in the tube is read off as before. The difference between the two readings of course gives the volume of the powdered coke substance, free from pores, and by dividing the weight of the coked used, in gram. by the number of c. cm. displaced, we get the specific gravity. Thus, if we took 25 gram. coke, and we found that it displaced 13·9 c. cm. of the fluid, we should have 25·0 ÷ 13·9 = 1·80 specific gravity of coke substance. The sample of coke in small pieces, No. 2, is now removed from the beaker in which it has been covered with fluid, on to a funnel, allowed to drain for a few seconds till all excess of fluid is removed, and is then carefully transferred to the apparatus. If too large a quantity of coke powder was used in the first determination, then the flask and tube must be cleaned out and newly filled with fluid, as at first; but if too much was not used there will be room for the second measurement without so refilling. In either case the displacement caused by sample No. 2 is carefully read off, with the same precautions as before, and as the pore spaces of the coke were fully filled up by the fluid in the beaker, we now get the volume of coke plus pore spaces, and from this again the specific gravity of the actual coke in question. Thus, taking 25 grms. as before, and finding a displacement of 28·75 c. cm. we have 0·87 as specific gravity of coke plus pore space. We thus arrive at the proportion of volumes in the coke under examination, of coke substances proper and of pore spaces:—

25 grams. coke + pores = 28·75 c. cm.
25 grams. coke powder = 13·9 c. cm.

25 grams. contains pores = 14·85 c. cm.

Or, taken on 100 grams. of coke, the coke substance would occupy 55·60 c. cm., the pore space would occupy 59·40 c. cm., giving a total volume of 115 c. m.; and 1 c. m. of the coke would weigh 869·6 kg. For the above tests there are required only two weighings (exact to 0·01 gram.) and three readings of the tube, which can be all done in half-an-hour.

THE LATE SIR WILLIAM SIEMENS.—The thirteenth lecture in connection with the Sunday Lecture Society's sixteenth season was delivered in St. George's Hall, Langham-place, on Sunday last, by Mr. W. Lant Carpenter. The lecturer stated that Sir William Siemens was something more than an ardent scientific discoverer, for his work during the last five or six years had interested the general public to a degree that had perhaps never before been the case with any man so devoted to science, beyond all his contemporaries he had promoted the practical application of scientific discovery to industrial purposes. The subject was particularly appropriate to a meeting in connection with a society of which he was a president. Charles William Siemens was born at Leuthe, Hanover, in 1823, and was one of a family eminent for their scientific knowledge and practical skill. In the life of Sir William the sympathy of the German mind for general principles, and the tenacity with which it clung to them, were well illustrated, and stood out in strongly marked contrast to the usual indifference of the average English mind to theoretic conclusions as opposed to so-called practical ones. It would be difficult to find an English inventor who had been so confident in the general utility of a few great principles. It was remarked by Sir William that the further we advance the more thoroughly do we approach the indications of pure science in our practical results. He was educated at Lubeck and Magdeburg, and at Gottingen University. His first invention was an improvement in the process of electro-plating, which he submitted in 1843 to Mr. Elkington, of Birmingham, by whom it was adopted. Having returned to Germany, he became a pupil in the engine-works of Count Stolberg, where he worked out a great improvement upon Watt's centrifugal governor for regulating the supply of steam to engines, and in 1844 returned with his invention to England, where he decided to remain. Several minor inventions followed, which met with varying success. In 1846, at the age of 23, he adopted the hypothesis now known as the dynamical theory of heat. Conceiving the idea of making a regenerator or accumulator which should store up a yielded quantity of heat and be capable of yielding it up again when required for the performance of any work, he constructed an engine on this plan in the factory of Mr. J. Hicks, of Bolton. In 1859 he also invented the regenerative gas furnace for the purpose of saving some of the heat lost in metallurgical operations. One of the most important applications of the regenerative furnace had been to the manufacture of steel. In 1874 the Landore Siemens Steel Company's Works were opened. He also predicted that the time was not for distant when both rich and poor would use gas as fuel. He also turned his attention to other subjects, and was in no small degree instrumental in bringing telegraphy, especially over long distances to its present condition. The invention of the machine for coating, conducting wires with india-rubber or gutta-percha was entirely due to Sir William, who also designed the steamship Faraday for laying and repairing submarine cables. He took a leading part in the development of appliances for the production of the electric light. He startled the world in 1877 by his proposal to transmit to distant points some of the energy of the Falls of Niagara. His great mental activity was shown by the fact that between 1845 and 1883 no fewer than 133 patents were granted in England to the Messrs. Siemens, and during the same period he contributed as many as 128 papers on scientific topics to various journals. The lecturer then spoke of his personal characteristic, including extraordinary perseverance, tenacity, and pliancy of intellect—a rare combination—and modesty, bringing a most interesting lecture to a close.

Original Correspondence.

A COMPLIMENT.

SIR,—If investors in silver mines want to see how so many companies have come to grief, and how their money has been wasted, I would recommend them to obtain from the North Mexican Silver Mining Company (Limited) copies of the reports of the managing director, Mr. Anthony Pulbrook, and of the metallurgist called in by him, Mr. Ottakar Hofmann.

I have been an investor in mines for years, and have always been led to understand by the several boards of the companies I have invested in that it was simply a matter of ordering a mill from the founders to extract the silver, just the same as you would order a mill to grind corn. I have never yet had such thoroughly reliable and business-like information supplied to me by any company as that contained in these reports, and their perusal will enable me in future to understand a little more of the business that I have invested my money in than I have heretofore done.

If success does not attend the operations of this company it will not be from want of business carefulness in looking after the moneys of the shareholders by those controlling the company. Should success result, and of that after reading the documents, I have very little doubt, it will plainly demonstrate that it has not been owing to the failure of the mines themselves that so much money has been lost, but rather from a want of knowledge, which has made directors of mining companies act in a manner which would ruin the richest mine in creation.

Until I read these papers, for my own part I was certainly not aware of the extraordinary care and judgment required to bring a mining enterprise to a successful result.—*London, Jan.* 22. X.

AURIFEROUS WEALTH OF NEW SOUTH WALES.

SIR,—Sunny Corner is in the county of Roxburgh, district of Bathhurst. In 1852 Mitchell Creek was an alluvial gold digging; but could only be wrought during the wet or rainy season for want of water. The alluvial mining of to-day is chiefly carried on by Chinamen; they make from 15s. to 30s. per week. Quartz mining commenced a few years later on. The first battery was erected by Mr. Donald Campbell, who in a few years realised a competency. In 1861 fourteen steam batteries were at work on this field, and the average weekly yield of gold was something like 600 ozs. The Messrs. Winter and Morgan succeeded Campbell, and is said to have got some 30,000*l.* in gold. The nature of the lode seemed to be patchy with very rich pockets; as much as 40 ozs. per ton has been got in gold, and left the tailings as worthless. About six years ago the lode seemed to pinch out entirely, work was stopped, and consequently a forfeit of claim took place.

The Messrs. Shepherd and W. F. Hurley took up the claim shortly afterwards, and had the tailings assayed for their richness in silver. Hitherto these diggings were wrought for gold alone. These gentlemen floated the company now known as the Sunny Corner Mining Company. The property held by the company is 250 acres of the best in the district, having been carefully selected during these last five years. The company consists of 64,000 shares of 1*l.* each; these shares are in the hands of a very few. Two sixpenny calls have been made, and, together with the proceeds of the works, seem to have met with all the requirements of the company. The principal gold-bearing lode is a siliceous one of varying thickness from 3 ft. to 6 ft., nearly horizontal, contains gold, silver, and a little lead, with a five-head battery, and between 500*l.* and 600*l.* is now being realised monthly. The erection of a ten-head battery and a large reducing furnace is rapidly being proceeded with, and until these are completed the other portions of the lode are lying in the mine. The bullion got from this source is valued from 11s. to 40s. per ounce, contains gold and silver, and the tailings yield on an average 50 ozs. of silver per ton, containing a little gold. Below this lies the main silver ore lode, a soft gossany ore, varying in thickness from 12 ft. to as much as 60 ft. in one place. Under this is another still softer course of argentiferous deposit, containing gold and copper. From 300 to 400 ozs. of silver to the ton has been assayed from these two lodes; then there is a fluctuating carbonate of lead lode in places of some thickness, in others entirely absent, the yield from it varying from 60 to 100 ozs. per ton of silver, and from 5 to 50 per cent. of lead.

Underlying all is a hard pyritous lode, containing silver and lead, which will require much roasting. The contractors for the erection of the large furnace guarantee 90 per cent. of the bullion shown by the assay contained in the ore. It is obvious to a casual observer that this is unmistakably a very rich mine, and works with the lode as above described. When the new furnace is erected it will reduce from 50 to 60 tons daily, and the present Pacific smelter is reducing 20 to 30 tons daily at present—say, 80 tons per day, or a produce of about 8000 ozs. of silver bullion, with a little gold, besides the gold produced by the batteries, which will amount to not less than something like 1500*l.* monthly. It is expected that the lead from the ore, together with the batteries' produce, will clear all expenses, leaving the bullion from the furnaces as profit. Only some 20,000*l.* has been spent on the works up to date. The tailings from the old workings are able to keep the furnaces at work for a long period, as their capacity is about 20,000 tons, besides the half won ores in the mines ready to be sent out when required. It is now, I learn, in contemplation to double the smelting plant shortly.

EMMAVILLE.—Of all these leases applied for on this silver ore field only these of the Messrs. Flannery, Webb, and Pomeroy have been granted, and these only last week; this procrastination has been a great hardship on the prospecting miners. Further discoveries of silver-bearing lodes have been made in this district by a miner in the employ of a syndicate; he will not let the locality be known till it is ascertained what area will be granted in one lease by the Minister of Mines. This is the result of the petition sent to the Minister by the public meeting held in Emmaville in the beginning of October. On the list of new railways of the present Government is the Glen-Innes and Inverell; the route of this line passes within 12 miles of Emmaville. Near Inverell nearly 300 diamonds were got from the wash dirt of Auburn Vale.

SILVERTOWN.—A new find has been made near Poolamacca head station, 35 miles north-east of Silvertown. A shaft has been sunk 14 ft., and a lode 5 ft. wide has been struck. The assays give a return of 418 ozs. of silver and nearly 60 per cent. of lead, and 183¼ ozs. of silver and nearly 50 per cent. of lead. It is 15 miles from any other silver ore find as far as is known up to date. The mines around Mount Gipps are looking well, and are reported likely to be the richest portion of the field. A parcel of 3 tons of silver ore has lately been dispatched from the Imperial Company, and before leaving the field a test assay of the whole was made, which returned 5000 ozs. to the ton.—*Lake Macquarie, N.S.W., Dec.* 7. IOTA.

QUEENSLAND MINING.

SIR, —The increasing demand for gold for the business needs, as well as the merely ornamental uses of the world, may possibly give your readers some little interest in the following items, extracted from the Herald's special report on the Gold Fields of Queensland; and I hope in a following letter to supplement it by a detailed account of the celebrated Day Dawn Mine and the newer discovery of Mount Morgan:—

Queensland is rich in minerals, but how rich the future alone can tell. There are gold and silver, copper, tin, antimony, and minor ores found not within any particular locality, and these alone, but in places far distant from each other, and under circumstances which vary much the one from the other. The most important mining districts in the colony at the present time are those of Charters Towers, in the north, and Gympie, in the south. In addition to these is the Palmer, one of the oldest mining districts, and which shows an aggregate wealth of gold equal to over 5,000,000*l.* sterling taken from its mine, a result as yet greater than that shown by any other district in Queensland. The gold, however, was taken from alluvial deposits, and as these are said to be now nearly worked out, and its reef workings are not as yet highly remunerative, it may be concluded that the sun of its prosperity is not far from declining. Other gold fields are Hodgkinson, Ravenswood, Etheridge, and Rockhampton, and several minor fields, such as Cloncurry, Clermont, Nebro, &c.

The following return of gold exported from the colony from 1863 to 1882 shows a marked decrease of late years in the quantity exported, and this decrease is not accounted for by local manufactures in gold having so greatly increased, and, therefore, less of the metal having been exported, but by an actual decrease in the quantity of gold extracted from the earth. No doubt the immediate cause is the working out of the large alluvial deposits, which in the earlier days of their development yielded the greater portion of gold in the colony. This decrease, however, should not be regarded as any decay of mining in the colony. It is doubtful indeed if alluvial fields should at any time be regarded as more than rich supplementary sources of mineral wealth; they are, comparatively speaking, but temporary, and whilst that of course is the character of all mineral sources of wealth it is less so in the case of quartz districts, which may, comparatively speaking, be regarded as permanent—even though they may be variable—sources of supply. That this decrease is the result of the working out of alluvial fields which at one time yielded a very large proportion of the total output of gold in the colony is indeed shown by the fact that in 1882 the total yield of gold in the colony was 224,893 ozs., being a decrease on the previous year of 46,063 ozs.. the principal falling off being among other places at the Palmer, at one time the great alluvial gold field of the colony, and which, as already stated, stands highest on the list for the total value of the metal taken from its mines. The following is the return referred to of gold exported from the colony of Queensland during the undermentioned years:—

	Ozs.	dwts.	Value.		Ozs.	dwts.	Value.
1863 ...	3,936	14	£ 14,802	1877 ...	353,266	0	£1,307,084
1872 ...	186,019	10	660,396	1878 ...	283,592	0	1,052,490
1873 ...	194,895	6	717,540	1879 ...	281,552	0	1,023,237
1874 ...	375,586	10	1,356,071	1880 ...	228,120	0	820,643
1875 ...	391,515	0	1,498,433	1881 ...	259,782	0	925,012
1876 ...	374,776	0	1,427,929	1882 ...	230,090	0	829,655

It is estimated that the Charters Tower gold field, where quartz mining solely is carried on, and the adjacent fields at the Cape and Broughton River have produced gold to the total value of not less than 4,000,000*l.* sterling. At Ravenswood, once an alluvial field but now a quartz gold mining district, not far from Charters Towers, over 1,000,000*l.* worth of gold has been produced, and about the same value of gold has been taken from the Hodgkinson field, south of the Palmer. Within the past 10 years it is estimated that altogether between 14,000,000*l.* and 15,000,000*l.* worth of gold have been extracted in the colony and exported, and to this must be added a percentage for what may be termed local consumption. The following tables from the annual report of the Department of Mines, Queensland, for the year 1883 may be of interest:—

Northern Division.—Yield of Gold, 1883.

	Ozs.		Ozs.
Charters Towers and Cape	69,559	Etheridge and Woolgar..	18,967
Palmer	24,089	Cloncurry	1,000
Hodgkinson	7,203	Normanby, Marengo, and Mount Wyatt	201
Mulgrave	302		
Ravenswood	13,000		
Total			134,321

Central Division.

Clermont	Ozs. 3,000	Gladstone	Ozs. 1,766
Nebo	2,615		
Rockhampton	5,591	Total	12,972

Southern Division.

Gympie and Kilkivan	Ozs. 64,818
Pikedale, &c.	676
Total	65,494

Average Yield of Gold per Ton, 1883.

	Ozs.	dwt.	grs.		Ozs.	dwt.	grs.
Palmer	1	1	14	Ravenswood	0	15	3
Hodgkinson	0	17	22	Clermont	0	10	1
Mulgrave	1	14	14	Nebo	3	1	2
Etheridge	1	10	0	Gladstone	2	10	12
Woolgar	2	0	0	Gympie	1	2	7
Charters Towers	1	10	17	Tenningering	1	1	0

From the same report I find that the highest average price given for gold in the year referred to was at the Palmer and Cloncurry, where it was 4*l.* an ounce; the next at Clermont, 3*l.* 15s. an ounce; at Gympie and Gladstone it was 3*l.* 10s. an ounce; at Hodgkinson and Mulgrave, 3*l.* 9s. an ounce; at Ravenswood, 3*l.* 8s. an ounce; at Charters Towers and Nebo, 3*l.* 7s. 6d. an ounce; at Rockhampton and Tenningering, 3*l.* 5s. an ounce; and at Etheridge and Woolgar, 3*l.* an ounce.

At the end of 1883 there were 338 gold mining leases and applications in force, nearly two-thirds of that number being at Gympie (116) and Charters Towers (109). The following table gives the total areas of the gold mining leases, &c., in force at the end of 1883:

	A.	R.	P.		A.	R.	P.
Gympie	928	0	16	Ravenswood	240	3	1
Charters Towers	1171	0	13	Etheridge	208	0	0
Palmer	261	0	20	Rockhampton	277	1	37
Hodgkinson	90	2	16				

One thing appears very certain that if Queensland had only one-half of the skilled labour and capital bestowed in gold mining by Victoria it would outrival it beyond comparison in the yield of the precious metals; and it is all but inconceivable to me now English capital is poured out like water for the use of American mines, whose whole average is so inferior in value to Queensland, whilst the latter colony is left utterly neglected by her own countrymen at home as a field of investment.—*Sydney, Dec.* 9. R. D. A.

THE GOLD MINES OF WALES.

SIR,—As mentioned in my previous letter, I shall state some of the chief causes which brought on the failure of the gold mines of Wales. At the time the gold fever was at his height, from 20 to 30 years ago, much ignorance was shown by respectable and wealthy companies in selecting their fields of enterprise—some chose places to dig for gold where there were very little signs of success; but they showed much more ignorance in choosing such men as they did for managers Many gentlemen think if their managers have been in Australia, California, or Brazil that they are infallible, and on account of this mistake companies have been often disappointed and the mines harmed. Several times men were chosen to this office through being friends or relations to some of the companies or to influential outsiders, although they were quite unqualified for the responsibility. And in many cases it would have been better for the companies to subscribe towards keeping them somewhere else doing nothing.

There are a class of managers a step above those just mentioned, but who rely much more than they ought on the little knowledge in their possession. Having studied mining so far, through books, &c., as to know the names of the different layers of the rock and the metals they contain, and being fluent in their talk about them, they succeed to persuade companies that they are capable of carrying on their mines in the best manner, although they know hardly anything about practical work, and perhaps had never been in a mine previous to their appointment. Not one out of ten of these even knew what was the reasonable price for cutting a fathom of rock before obtaining directions from some of the workmen. How could it, therefore, be expected for any mine to be successful under the management of such? I have seen good managers, but only those that were chosen from the working class.

Another cause of the failure was bringing to the mines large and costly engines before ascertaining whether was there gold in the rock at all or a sufficient quantity of it to pay by using them. If a farmer in England would engage a thrashing-machine for a month without a handful of corn to be thrashed with it he would be considered out of his mind. But something similar to such an act has been done many times in connection with gold mines. Besides this, inappropriate engines have been brought to the mines; and often when this would be the case, and the engine had been proved ineffectual, its promoter would be too stiff and opinionated to turn it aside and take a more appropriate one instead of it. And, as an example, I may say that a certain manager put up what is called silver plates at a rich gold mine, but after having a proof of their ineffectiveness used to take amalgam from other engines and put it on these plates with his hands by the time he expected the company to the place. This manager was receiving not much less than 40*l.* a month for his own service and the silver plates. Another cause of their failure, and which shows great ignorance, was putting up of steam-engines on the banks of rivers or streams of clear water, and this was often the case, as anyone who likes to take a walk as far as the mines could see for himself at present. Workmen have been at different times calling the attention of a certain manager to the gold being carried away by the water to the river, but he instead of taking it into consideration took offence.

I suppose that these facts and others that could be presented are weighty enough for all gold companies to notice them carefully, and to act in the future with the utmost discretion and patience possible in choosing their managers; and also to consult experienced men before taking any mine in hand. In connection with this mining business let it be understood that some few mines have been sold at a considerably high price, where no gold has been discovered only at the time of sale. But hundreds of pounds of stones containing excellent gold have been sent as Christmas boxes from this district to friends in London and other places, injuring both the mine and the company. Maybe that every workman has not dealt just in this respect. But gold generally shows itself some way or other on those who possess it, but little are the signs of it to be seen on the poor miners of the Dolgelly district. Many workmen have been eye-witnesses of some of those that looked over a mine putting themselves in a doubtful position, whether their acts were right or not. For they used tapping and retorting, and then to melt the gold, and that as much as they could in the absence of the workmen. This may be all right, but a doubtful act of one class of men in connection with gold mining puts a temptation before others, and that a very keen one. It would be far better if these were done without any attempt at secrecy. The butchers, hotel-keepers, and drivers of Dolgelly and the neighbourhood may be asked who were their best customers when the gold mines were at full work here?

I would appeal to any of your able correspondents for a plan that would make all the gold obtained at the mines perfectly safe until it reaches the public market, and whoever can point out such a plan will serve a very good turn to gold companies, and will help greatly the future success of gold mines in this district. I may also say that I think that no searcher for gold in this or any other district would be at a loss if he carefully notes these remarks, and acts in the future with his eye on them. They contain general hints, which if acted upon will bring some change for the better to the future of the gold mines of Wales.—*Gaullwyd, Jan.* 17. MWNWR.

TRADE AND NAVIGATION OF THE UNITED KINGDOM, 1884. No. II.

Table of the principal exports of merchandise.—The countries arranged in the order of the declared value of the exports. Values expressed in thousands sterling.

To British East Indies, 30,482*l.*; Germany, 21,213; United States of America, 18,717; France, 18,440; Australasia, 15,608; Holland, 10,501; Belgium, 8851; China and Hong Kong, 5831; British North America, 5781; Italy, 5306; Turkey, 5279; Brazil, 5096; Russia, 4620; Argentine Republic, 3347; Spain and Canaries, 2297; Egypt, 2251; British possessions in South Africa, 2162; Sweden and Norway, 1845; Japan, 1545; Dutch possessions in India, 1485; Foreign West Indies, 1399; West India Islands and Guiana, 1371; Chili, 1188; Denmark, 893; West Coast of Africa (foreign), 768; Uruguay, 754; Portugal, Azores, and Madeira, 689; Peru, 627; United States of Columbia, 586; West Coast of Africa (British), 581; Malta, 574; Greece, 550; Phillipine Islands, 540; Central America, 515; Mexico, 483; Gibraltar, 422; Venezuela, 373; Austrian Territories, 359; Roumania, 282; Channel Islands, 48*l.*

Table of gold exports.—Values expressed in thousands sterling.

United States of America, 2183*l.*; Egypt, 1637; British East Indies, 1392; Holland, 1390; Mexico, South America (except Brazil), and West Indies, 1052; Australasia, 920; Portugal, Azores, and Madeira, 800; Spain and Canaries, 765; Brazil, 435; Germany, 288; British North America, 267; France, 263; Sweden, 171; British possessions in South Africa, 100; Belgium, 82; West Coast of Africa, 34; Malta, 20; Gibraltar, 7*l.*

Table of silver exports.—Values expressed in thousands sterling.

British East Indies, 7577*l.*; China (including Hong Kong), 761; France, 633; Spain and Canaries, 448; Mexico, South America (except Brazil and West Indies), 170; West Coast of Africa, 99; Australasia, 44; Holland, 37; Portugal, Azores, and Madeira, 18; Germany, 14; United States of America, 8; Egypt, 7; British North America, 6; Belgium, 5; Brazil, 2*l.* T. A. READWIN, F.G.S.

London, Jan. 21.

INSTITUTION OF MECHANICAL ENGINEERS.—At the annual general meeting on Jan. 29 and following day the annual report of the council will be presented, and the annual election of the president, vice-presidents, and members of council, and the ordinary election of new members, associates, and graduates will take place. The reports and papers to be read and discussed, as far as time will admit, are:—"Final Report on Experiments bearing upon the question of the Condition in which Carbon exists in Steel," by Sir Frederick Abel, C.B., D.C.L., F.R.S., honorary life member; "Second Report of the Research Committee on Friction;" "On recent Improvements in Wood-cutting Machinery," by Mr. George Richards, of Manchester; "On the History of Paddle-wheel Steam Navigation," by Mr. Henry Sandham, of London; "Description of the Tower Spherical Engine," by Mr. R. Hammersley Heenan, of Manchester.

THE TRANSVAAL GOLD COMPANY.—Mr. Alf. H. Crutwell, F.G.S., who was the first engineer of the Transvaal Gold Exploration and Land Company, and on the faith of whose report a great deal of money was embarked in the speculation, writes as follows, under date Lydenburg, Dec. 16:—The following reasons I submit to the public in order to exculpate myself from any share in the mismanagement of the Pilgrim's Rest estate.—1. The company, after obtaining my advice as to what gold dressing and crushing machines should be sent out, went directly against my advice, and sent out machinery which was not adapted for the work which it had to do.—2. Against my express advice, the company insisted on using steam-power, when an unlimited and never-failing supply of water for all working and mining purposes was available upon the property.—3. The company sent me out expressly to open out the property; but no mining operations whatever were undertaken during the time I was on Pilgrim's Rest.—4. Most of the quartz should be treated with bismuth to eliminate the antimony contained in it, and other quartz should be laid out on bank in sheets instead of in stacks, so that the sulphur contained in it should be eliminated by the atmosphere. If these were done, the yield of gold per ton of quartz would be double what it is at present.—5. The public are wrong in expecting an immediate dividend upon their outlay, as in all mining enterprises it is a work of time to develope them, however rich.—6. From what I have heard, this company has sent away sufficient gold already from Pilgrim's Rest to declare a handsome dividend.—7. Hydraulicing is not the proper manner to work the property.—8. The company knows hardly anything at present as to the riches or resources of their property, as only a minute portion of the estate has been opened out, and that in a most unworkmanlike manner.—9. I made the company an offer a year ago to get out an abundant supply of gold per day, which was most reasonable, and if the stipulated quantity of gold fell short of what I guaranteed, I was to receive nothing for my services. My offer was not accepted.—10. It cannot be long before the world will acknowledge this property to be one of the richest gold-producing estates in the world.

IRON TRADE RETROSPECT.

The year 1884 was, write Messrs. W. FALLOWS and Co. in their annual metal circular, very unsatisfactory to those engaged in the iron trade. It will be remembered as a period of prolonged and unrelieved depression, coupled with considerable contraction in the volume of business and a further fall in prices. The cause is not difficult to discover. For many years past the iron trade of the world has been subject to periods of expansion and contraction, mainly due to those sudden outbursts of railway extension so common in the United States, and it can only be hoped that the severe experience of the past may prevent a repetition of similar mistakes in the future. The world's production of pig-iron in 1868 was 9,392,165 tons, and in 1872 it had increased to 13,906,000 tons the new lines of rails in the United States in these years, both inclusive, reached 26,921 miles. In 1879 the production was 13,768,000 tons, increasing to 20,410,000 tons in 1883; and the new lines of rails in the United States in these years, both inclusive, were 39,775 miles. During these two periods (of five years each) more than one-half of the total mileage of the United States was laid. The total mileage at close of 1883 was 121,425 miles. We are now passing through the period of contraction, and this has been especially severe in the United States during the past year. Mr. Swank, the secretary of the American Iron and Steel Association, estimates that the production of 1884 will be about the same as 1880, which was nearly 1,000,000 tons under that of 1883. Although a considerable number of furnaces were blown out in the United Kingdom in the latter half of 1883, it was not till last year that any very marked diminution in the production took place. We estimate that the output of pig-iron would not exceed 7,700,000 tons, against 8,490,224 tons in 1883. This reduction was due to a falling off in exports amounting to over 500,000 tons (mainly pig-iron and steel rails) and to the depression in shipbuilding. Assuming that the tonnage built last year was about 800,000 tons, compared with 1,329,604 tons in 1883, this would represent about 350,000 tons less iron and steel consumed in the shipyards and engineering establishments of the country.

There was a considerable restriction of output in the Cleveland district in consequence of a combination among the makers, formed with a view to sustain prices and prevent any very large increase in stocks. In accordance with this arrangement the number of furnaces was reduced from 118 on Jan. 1 to 102 by the month of March, and afterwards to 98 before the close of the year. These restrictive measures resulted in a considerable curtailment of production, the total output of this district being only 2,484,340 tons, against 2,760,740 tons in 1883. The quantity of ordinary forge and foundry iron was 1,714,682 tons, against 1,885,508 tons, but the production of hematite spiegel and basic pig-iron decreased from 905,232 tons in 1883 to 769,658 tons in 1884. Shipments, though large, were under those of last year, being 926,856 tons, against 986,314 tons in 1883. The consumption at the forges was greatly reduced, owing to the depression in shipbuilding, as it is estimated that ship-plates and angles form 80 per cent. of the whole production of finished iron. Stocks increased during the year from 253,105 tons to 338,689 tons on Dec. 31. The makers, under the influence of the combination, maintained their price nominally at 37s., but towards the close of the year there were sellers in the Middlesborough market at 35s. 6d. The number of furnaces in blast on Dec. 31 was 98, against 117 same time 1883, and 120 at close of 1882.

In Scotland prices fluctuated but little. G.M.B. warrants, which were 43s. on Jan. 2, advanced during that month to 44s. 8d., which was the highest price of the year. After varying fluctuations 40s. 10d. was reached on June 4, which was the lowest price accepted. Under strong pressure to close "bear" sales, the price rapidly advanced in November from 42s. 4½d. to 44s. 4½d., but afterwards receded to 42s. 3d., which was the closing price in December. These low prices led to the blowing out of 10 furnaces during the year, it being found impossible to carry them on except at a heavy loss. The number of furnaces in blast was 93 at the close of 1884, against 103 in 1883, and 112 in 1882. The trade in Scotch brands was very unsatisfactory, the exports showing a reduction of 113,000 tons (or nearly 20 per cent.) when compared with 1883. The consumption of foundries and malleable ironworks was 15,000 tons less than 1883. In consequence of the large reduction in the output stocks have been but little affected, the total at Dec. 25 being estimated at 821,000 tons, against 835,000 tons in 1883. The publication of the accounts of some of the large Scotch iron companies indicates how unprofitable the business of the last year has been, and it would appear almost impossible to carry on these works unless there is either some improvement in prices, or a reduction in railway rates and royalties, which are understood to be more onerous in Scotland then in some other districts.

With the single exception of steel rails there has been a general decline in prices of manufactured iron. The trade in finished iron in the Middlesborough district was greatly affected by the depression in shipbuilding, and the returns made for the purpose of regulating wages show a monthly average of about 37,000 tons plates, angles, bars, &c., as compared with 55,000 tons in 1883. Prices of ship-plates and angles declined 10s. to 12s. 6d. per ton on iron, and 20s. to 25s. in steel. The works of North and South Staffordshire, Lancashire, and other Midland districts were better employed on bars, hoops, and sheets, but prices also declined 5s. to 10s. per ton. Welsh bars were in poor demand, and receded 7s. 6d. to 10s. per ton. Owing to the opening of new works and excessive competition, galvanised sheets, which were 12*l.* 10s. in January, had declined to 11*l.* 10s. by the close of the year. Under the influence of severe competition the price of steel rails was forced down to about 4*l.* per ton in the month of January, and immediately thereafter an arrangement was come to among the principal makers of this country and the Continent by which the price was advanced to 4*l.* 15s. to 5*l.* 5s., with an understanding that the orders received were to be apportioned among the different makers. So far this arrangement appears to have worked satisfactorily, although the volume of business has been small, and it is no secret that some large buyers are holding back in the hope that this combination may be broken through, and it is certain the advance in price must have tended to restrict business. The future of this trade is very uncertain. Experience proves that railway extension is very spasmodic and uncertain, and having had a period of considerable activity during 1880-1883, we must now look for a quieter time. It is estimated that over 65 per cent. of the lines in this country, and about one-half of the lines in the United States are now laid with steel, and the quantity of rails required for the yearly maintenance of these roads must now be very much less than formerly.

Sufficient time has not elapsed to define with certainty the average life of steel rails, authorities varying considerably as to the relative difference; but, assuming iron at 10 and steel at 30 years, the difference is very serious. The total tonnage of iron and steel rails now laid down in the world is probably not less than 37,000,000 tons, representing 370,000 miles of single line. Assuming that on an average half are laid with iron and half with steel, the present yearly requirements for renewals would be under 2,000,000 tons, which would be steadily decreasing until, in 10 years (if by that time the whole of the iron rails were replaced with steel), the requirements for renewals would have sunk to a very small quantity, as even by that time few steel rails would require to be replaced. In this connection we may mention the possibility of steel sleepers superseding wood, which might compensate for this impending change in the rail trade. It is estimated that the weight of sleepers per mile would be about equal to that of the rails. It is difficult to realise the extraordinary change which has taken place in the conditions under which the iron trade is now carried on in this country owing to the large substitution of steel for iron. Instead of using entirely our native ores, we are now, to a large extent, dependent on foreign supplies. This will be manifest from the following table:—

Production of iron ore in	1871.	1876.	1880.	1883.
United Kingdom...Tons	16,334,338 ...	16,824,427 ...	18,026,007 ...	18,000,000
Import of iron ore into United Kingdom	324,034 ...	672,235 ...	2,634,401 ...	3,178,310
Production of pig-iron of all kinds	6,627,179 ...	6,555,997 ...	7,721,833 ...	8,490,224
Production of pig-iron from hematite ore	1,345,000 ...	1,584,000 ...	2,838,000 ...	3,287,700

It appears, therefore, that whilst the total production of pig-iron has increased 28 per cent. since 1871, the increase in steelmaking pig-iron has been 137 per cent. As is well known, the main cause of this extraordinary charge was the general adoption of the Bessemer process in the production of rails, which it was found could be made cheaper in steel than iron through the introduction of improved machinery and other appliances. As the only important deposits of ore suitable for the Bessemer process are found in Cumberland and North Lancashire, it was soon found necessary to resort to other countries, from whom large supplies could be obtained. These were found mainly in Spain, which appears likely to be able to supply all the wants of the world for many years to come. Considering the advantages likely to follow from any discovery which would enable our inferior ores to be used for steelmaking, it is not surprising that experiments, extending over a series of years, resulted at last in what is known as the basic process, by which this desirable result was accomplished. The relatively low price of hematite during the last two or three years has interfered with its extension in this country, but on the Continent, where the difference between common and hematite pigs is considerable, this process has made considerable progress. It is not improbable that circumstances may arise before long to favour the greater extension of this new discovery, and it may yet prove of the greatest importance to this country in its fight for supremacy.

The future of the iron trade is surrounded by much uncertainty. Notwithstanding the considerable shrinkage in the exports of 1884, there is no immediate prospect of any material increase. Owing to the great extension of production in the United States, and the general depression which prevails there, any prospect of a large demand from that quarter is almost out of the question. Although it is possible that many of our foreign customers are running low in stocks, still there is nothing special in the condition of these countries to encourage the hope of any largely improved demand. At home shipbuilding and engineering remain depressed, with no immediate prospect of improvement, unless there should be a sudden and very decided increase of expenditure in connection with the navy. On the other hand, it must not be overlooked that prices are low and, in many cases, unprofitable. Already many producers have been compelled to stop their works in consequence of heavy losses, and should this extend further it might lead to such a restriction of production as would tell upon prices.

THE LEAD TRADE, AND ITS PROSPECTS.

Some remarks lately made by Lord R. Grosvenor to his constituents in Flintshire, giving a favourable account of the lead trade in face of foreign competition, have, says the Newcastle *Daily Journal*, provoked rejoinders which will be read with interest. One correspondent quotes the figures from the Board of Trade returns, which show that during the last three years the exports of lead from this country have fallen off both in quantity and in price, whilst the imports have, in quantity at least, increased rather considerably, though owing to the fall in prices they have not increased in value. Another correspondent gives figures still more significant—the decrease as between 1871 and 1881 of the population engaged in the lead mining industry in this part of the country. The six parishes of Allendale, Blanchland, Middleton-in-Teesdale, Muggleswick, Hunstanworth, and Stanhope had in 1871 a population of 23,094; but in 1881 it had fallen to 18,871, a decrease of 4224, or 18 per cent. Nor is there any reason to doubt that the decrease has gone on much faster since the last Census, as the lead industry is a great deal worse than it was then, and many important mines have been closed. Whatever use may be made of these facts in the argument of Fair v. Free Trade, of the facts themselves there can be no manner of doubt, so that it appears Lord Richard Grosvenor has been very unfortunate in selecting the lead trade as an industry which is thriving in the face of free foreign competition on the one hand, and prohibitory tariffs on the other. The truth seems to be that it is one of the native industries which is on the fair way to ruin, and of course whilst that means the shutting up of one avenue for the profitable employment of native capital, it has already turned adrift many thousands of honest and intelligent workmen to seek employment in other already over-stocked industries, or to emigrate to other and more promising lands.

The Census returns from the following six lead mining parishes are worthy the attention of free and fair traders. They are taken from the Supplement to Ward's Directory:—

	1871.	1881.	Decrease.
Population of Allendale	5,397 ...	4,030 ...	1357
" Blanchland	407 ...	293 ...	114
" Middleton-in-Teesdale	4,579 ...	4,412 ...	167
" Muggleswick	1,677 ...	841 ...	836
" Hunstanworth	704 ...	502 ...	202
" Stanhope	10,330 ...	8,793 ...	1537
Total	23,094 ...	18,871 ...	4223

Since 1881 the mining industry has become much worse, and the population still lower. Are the owners of these mines to be entirely ruined, and the workers scattered abroad to seek a living as best they can, because Spanish lead can be sent here at a much lower cost than it can be produced in the North of England? We are employing Spanish miners and smelters to do the work that Englishmen can do. Fancy what a row there would be if 500 Spaniards were to come here to work our mines and smelt mills, and yet we are filling Spanish stomachs and allowing English workers to famish.

Referring to the same subject, a correspondent, signing himself "Lead Investor," says:—As there seems to be an impression amongst those engaged in the lead trade that our imports are decreasing, I hope you will allow me sufficient space to give the following extracts from the Board of Trade returns for 1881:—

		1882.	1883.	1884
LEAD EXPORTS				
Pig sheet, piping, and manufactures	Tons...	37,375 ...	39,315 ...	33,539
	Value.. £	577,325 ...	£ 553,144 ...	£ 421,990
LEAD IMPORTS.				
Pig-sheet.....	Tons...	87,741 ...	101,589 ...	109,014
	Value..	£1,265,362 ...	£1,303,184 ...	£1,221,000

The above figures must clearly show our exports are decreasing, while the imports are increasing. Can we, then, be surprised to hear that all over this country lead mines are being closed, while a large smelt mill in Weardale which has worked unceasingly for hundreds of years has to be permanently shut up, and the men sent to seek that "something else" wherewith to earn their daily bread, for I am firmly convinced (and, if they will but speak, those engaged in lead producing will confirm me) that lead ore raising and smelting, which has found employment for thousands, is a doomed industry unless some change be made in our fiscal policy. When will working men speak out? Men whose labour is their capital, who must earn their bread by the sweat of their brow, and to whom it is but a bitter mockery to offer the cheap loaf, while obstinately refusing them the labour to pay for it.

"Galena" writes:—Respecting Lord R. Grosvenor's remarks to his constituency in Flintshire as to the prosperity of the lead trade, I have not had the good fortune to read his lordship's speech, but I think he must have been very ignorant indeed as to the real state of that industry, not only in a general point of view throughout the United Kingdom, but in the particular county to which his remarks referred. Here is a proof of this. The production of lead ore in Flintshire (which is one of the chief producing counties in Wales) in 1881 was 4393 tons, representing a value of 45,521*l.*, and in 1883 the production had fallen off to 2784 tons, representing a value of 25,792*l.*, showing a decrease in the value of the total yearly production of nearly one-half in the period of two years, simply owing to the continued decrease in the price of pig-lead. The produce for 1884 is not yet published, but it is certain to show a further falling off. Can this be called prosperity? I say certainly the reverse and the facts, on the face of them, give an unqualified contradiction to his lordship's remarks. The same falling off in the production of lead ore in all the other Welsh counties is equally significant as that of Flintshire. In Cardigan it fell in the period mentioned from 4598 to 2978 tons, in Pembroke from 1694 to 831 tons, and similarly throughout the other counties. Then, coming to our own northern counties—Northumberland, Cumberland, and Durham, we find the same ominous shutting up of mines, and the consequent decrease in the production of lead ores. For example, in 1880 the quantity of lead ore offered publicly for sale in these counties was 4837 tons. English pig-lead at the commencement of that year being 19*l.* 7s. 6d. per ton and at the end of last year (1884), lead having fallen in price to 11*l.* per ton, the lead ore offered for sale during the year was only 3143 tons, showing a decrease of over one-third in quantity and a considerably larger decrease in the total yearly produce. The result of this falling off in the production of lead ore, is an increased competition for the little there is coming into the market. Smelters overbidding each other and not being able to procure material to keep their works going are obliged to reduce their workmen, in many instances to less than one-third they employed a few years ago. Yet, with all this falling off in the production of English lead the manufacturers of white-lead, sheets, &c., meet the sellers of English pigs with the observation that "there is plenty of Spanish and German leads to be had, and which are freely offered for forward contract over the first half of the current year." This contracting forward, although it covers the manufacturer in his forward contracts for white-lead, &c., acts very much against English miners and smelters, as it to a very great extent fixes the maximum price of pig-lead over that period. The foregoing are incontrovertable facts, which can be readily verified and show very significantly in what direction the English lead trade is drifting; and although I should not by any means advocate the idea of reverting to the old policy of Protection, yet I think it is high time official enquiries were instituted with a view to the adoption of some Fair Trade policy which would put our import and export trade on a more equal footing, and check the unconditional importation of foreign lead into this country, otherwise it is quite clear that the English lead industry, one of the oldest (if not actually the oldest) of our national industries, will to a very great extent become a thing of the past.

"Lead Investor" replies:—Doubts having been cast on the figures I sent you with regard to our decreased exports and increased imports of lead, I shall esteem it a favour if you will publish the reply I have sent to it as follows:—In your trade article of Monday you refer to some figures I sent you with regard to the lead trade, which you say 'differ from the official ones.' On referring to Blue Book C, 4095, in 1883, I find 3553 tons passed through this country in transit, but I ask you, or anyone else, to say what material benefit we thereby received; in fact, it rather shows our own lead trade was proportionally diminished, and, therefore, deducting the above quantity from your figures, you will see those I gave you as issued by the Board of Trade are correct. You further state my figures as to the import trade are faulty, without naming in what particular, which I will be glad to learn, only adding I cordially re-echo your comment that 'there should be accuracy in figures when trade questions are under discussion. Permit me, in conclusion, to tell you, on the authority of the Board of Trade, that our exports of lead—not counting that in transit—had fallen from 48,365 tons in 1869, to 39,315 tons in 1883; while, during the same period, our imports had risen from 52,683 tons to 101,715 tons; and further, the metallic lead produced from British ores had fallen from 73,259 tons in 1869, to 50,328 tons in 1882, while the corresponding diminution in silver from lead was from 831,891 ozs. to 372,544 ozs. Ask lead miners what this means to them?

DUPLEX ELECTRIC LIGHT, POWER, AND STORAGE COMPANY—DEBENTURE HOLDERS' RIGHTS.—At the High Court of Justice, before Vice-Chancellor Bacon, an action was brought by Mr. John Edwards on behalf of himself and all other debenture-holders of the above company, which is now in liquidation, asking in substance to have payment of the debentures enforced. It appears that in May 1883, the directors desiring to issue a debenture loan, which they were entitled to do by the Articles of Association, the defendant, Dr. Emmens, who was general manager, suggested by way of encouraging the shareholders to come forward, that an offer should be made to all shareholders whose shares were fully paid up, to take payment for the debentures, half in cash and half in fully paid up shares of the company, and at a subsequent board meeting the suggestion was approved subject to counsel's opinion. It appeared, however, that of the three directors supposed to be at that board meeting and necessary to form a quorum, one was never there at all, and another came after the alleged business had been concluded. On May 12 a circular was issued to the shareholders stating that they might in exchange for 5*l.* cash and five shares obtain a debenture for 10*l.*, bearing interest at 6 per cent., and several debentures upon these terms were issued. On May 17 a covering deed was executed by the company, whereby, after reciting that the directors intended to raise a sum of 20,000*l.* by the issue of debentures, the company in consideration of the premises, conveyed the letters patent, the unpaid capital and future calls, and all the undertaking, lands, machinery, plant and effects whatsoever of the company to the defendants as trustees for the debenture-holders, the deed being registered as a bill of sale. On June 6 a petition was presented for winding-up the company, and on June 14 the usual order was made, and a liquidator subsequently appointed. The Vice-Chancellor, in giving judgment, said that a distinct breach of the Companies Act, 1862, had been committed by the defendants. The Act stated that every company should cause minutes of their proceedings to be kept, which should be signed by the Chairman, and that then those minutes might be received in evidence, and as the minutes of the meeting at which the defendant's suggestion was approved, subject to counsel's opinion, were not signed, they could not be received in evidence. It was said that a previous meeting was held at which it was resolved to raise the loan; but he could find no such thing. Had he found the minutes of that previous meeting confirmed, possibly there might have been some ground for the argument that what was done was sufficient, but he did not find that any such resolution had been passed. There being no such resolution, all that was done was illegal and invalid. It was said that three directors were present at the meeting on May 8, but that was by no means clear. Then he had been referred to a circular proposing that each fully paid-up shareholder should, in consideration of 5*l.* cash and 5*l.* paid-up shares, receive a debenture of 10*l.* bearing 6 per cent. interest. That meant this, "You have already, as a shareholder in this company, contributed 5*l.*; it is your money no longer; and if you give us 5*l.* more we will give you a mortgage for 10*l.*" Was that within the Articles of Association? In his opinion it was a clear fraud, in the sense of being *ultra vires*, upon the other shareholders, who were to have 5*l.* taken from their joint stock for the benefit of those of their body who chose to pay over 5*l.* The whole thing was, in his opinion, invalid; and even if the minutes of May 8 had authorised the issue of the debentures in a regular manner the transaction would have been inequitable and unfair, and altogether outside the duties of directors, for it was a contrivance by which witless people would pay the gambling game for this company, by which they would be cheated of their stakes, and would receive nothing but counters and checks in return. This was enough to decide the case, and on that ground he dismissed the action with costs, the whole transaction being a fraudulent contrivance, not authorised by the Articles of Association. Costs were refused to the plaintiff.

SPECIAL ENGLISH PUMPING PLANT FOR MARSEILLES.—Messrs. Hathorn, Davey, and Co., of the Sun Foundry, Leeds, have completed some splendid hydraulic machinery for Marseilles to the order of La Société Anonyme de Charbonnages des Bouches de Rhone. It comprises plant for draining a colliery where the ordinary conditions of pumping are not applicable. The colliery is subject to periodic inundations during the wet seasons, so that whatever machinery is laid down would sometimes be under water. Messrs. Hathorn, Davey, and Co. have carried out an hydraulic scheme by which the water is pumped by means of hydraulic engines placed underground in the workings. These engines being actuated under a system of hydraulic transmission from steam-engines situated on the surface. The hydraulic pumping-engines below are so constructed that they can be started and stopped from the engine-house on the surface. The surface engine is of the compound type and of 150 horse-power, which is transmitted to two large hydraulic pumping-engines at the bottom of the mine employed in pumping water between 4000 ft. and 5000 ft. The surface engine is provided with a steam accumulator instead of the ordinary weighted accumulator.

THE REVENUES OF THE FOREST OF DEAN.

The following Parliamentary return relative to the revenues of the Forest of Dean is issued :—

1.—Gross annual revenue (distinguishing rents of houses, buildings, railways, lands, &c.), from the surface, and annual expenses connected therewith, so as to show the net revenue between March 31, 1871, and March 31, 1884.

Years ended March 31.	Gross revenue, excluding rents.	Rents of houses, buildings, railways, lands, &c.	Total.	Annual expenses connected with the surface.	Net surplus.
1872	£ 5,951	£1456	£ 7,407	£6220	£1,187
1873	7,417	1589	9,906	5718	3,288
1874	6,337	1661	7,999	7104	895
1875	7,636	1716	9,353	5270	4,082
1876	11,577	1029	12,607	5839	6,768
1877	10,289	2260	12,550	6138	6,411
1878	7,224	1590	8,814	6720	2,094
1879	5,669	1885	7,555	5348	2,206
1880	5,483	1830	7,313	4596	2,717
1881	6,531	1696	8,227	4897	3,329
1882	6,262	1721	7,984	5058	2,926
1883	4,601	1856	6,457	5362	1,095
1884	6,294	1748	8,043	7992	51

Total net surplus..... £37,055

No portion of the costs and expenses of the Office of Woods, &c., in London, is included in this return, as it has been found impossible to apportion such cost and expenses. The sums expended in forming plantations in the Forest for the growth of timber, are included under the heading "Annual expenses connected with the surface."

2—Gross annual revenue from mines (including stone quarries and clay and sand pits) and annual expenses connected therewith (in the Forest of Dean and Hundred of Saint Briavels), so as to show the net revenue between the same periods.

Years ended March 31.	Coal.	Iron.	Stone, clay, and sand.	Total.	Annual expenses connected with mines, &c.	Net surplus.
1872	£14,207	£3442	£688	£18,337	£2555	£15,782
1873	12,018	3834	869	16,722	2492	14,229
1874	11,996	4614	762	17,372	2865	14,506
1875	10,170	3556	804	14,531	2632	11,899
1876	10,005	2640	811	13,457	2367	11,090
1877	9,482	3794	775	14,053	2270	11,783
1878	9,491	2251	655	12,398	2226	10,171
1879	10,152	2611	771	13,535	2666	10,868
1880	11,258	2427	761	14,448	2407	12,040
1881	10,452	2535	738	13,726	2521	11,205
1882	11,145	2246	761	14,153	2569	11,583
1883	11,089	1839	592	13,521	2262	11,259
1884	10,706	1343	636	12,686	2566	10,120

Total net surplus £156,540

The Forest of Dean is situate in but is not co-extensive with the Hundred of Saint Briavels. The mineral rights of the Crown extend to both forest and hundred, and the figures in the foregoing table relate to both, as the accounts do not distinguish between the hundred and the forest. The gross revenue from coal and iron includes the royalties received for minerals under freehold lands within the Hundred of Saint Briavels, and the annual expenses include the payment of one moiety of such royalties to the owners of such freehold lands, in pursuance of the 67th Section of the Act 1 and 2 Vic., c 43. The payments vary from year to year, but on an average of the past ten years have amounted to 484*l.* 17s. 7d. per annum. No portion of the costs and expenses of the Office of Woods, &c., in London is included in this return, as it has been found impossible to apportion such cost and expenses.

3.—Quantity of land sold in each year since March 31, 1871, and the amount received each year for the same.

Years ended March 31.	Acreage.	Purchase money.
1872	1A. 0R. 15P.	£ 193 10 0
1873	4 3 11¼	653 2 6
1874	2 3 29½	604 2 6
1875	3 1 9	544 0 0
1876	6 2 6¼	992 0 0
1877	6 3 2¾	1561 0 0
1878	6 2 32¾	1419 1 3
1879	4 2 17¾	270 5 4
1880	1 3 14¾	256 12 6
1881	1 3 5¾	301 10 0
1882	1 0 13¾	76 2 6
1883	1 1 27¼	219 15 0
1884	0 2 4¾	78 7 6
Total	43 1 29	7079 9 9

4.—The present estimated extent (expressed in acres) of the entire area of the Forest, exclusive of all land the soil of which does not now belong to her Majesty.

	A.	R.	P.
1. Estimated quantity covered with timber and plantations, made prior to 1869 (exclusive of freehold plantations)	14,844	2	26
. Estimated quantity enclosed and planted since 1868	327	3	2
3. Estimated quantity occupied by mines and quarries, and as roads, railroads, tramways, watercourses, &c., in connection with mines, quarries, &c.	1,000	0	0
4. Estimated quantity now being planted	—		
5. Estimated quantity belonging to the Crown over which there are no rights of common (including about 491A. 3R. 4P. of freehold plantations)	763	2	23
. Estimated quantity not occupied in any of the above ways	1,773	3	26
Total estimated quantity, the soil of which now belongs to Her Majesty	18,709	3	37

No survey and admeasurement of the whole of Dean Forest has been made since the year 1787, and consequently the figures given in the above table can only be regarded as rough approximation to the truth. This remark applies to the item No. 3, more particularly because the mine works, quarries, roads, tramways, &c., are so numerous, so scattered, and so irregular that it is almost impossible to give any reliable estimate of the aggregate area occupied by them.

GWERN-Y-MYNYDD.—At the extraordinary general meeting held at the offices of the company, Dashwood House, on Monday, the following resolutions passed at the previous meeting were duly confirmed—"That Gwern-y-Mynydd be wound up voluntarily." "That Mr. W. J. Lavington be and he is hereby appointed liquidator." "That the liquidator be authorised to sell and dispose of the entire property and assets of the company, subject to all its debts and liabilities, to a new company, to be formed with a capital of 50,000*l.*, in shares of 1*l.* each. That the price to be paid by the new company shall be 30,000*l.*, payable wholly in fully paid-up shares of such new company. That such shares, when received, be allotted or transferred to the shareholders in the present company in the following proportion—one fully-paid share of 1*l.* for each ordinary share in the present company, and two such shares for each preference share. That all shares in the company shall rank equally for dividend, share and share alike, irrespective of the amounts actually called up on each such share. That one-half of the balance of shares in the new company remaining unapplied, after payment of the aforesaid purchase-money, be offered for subscription to the shareholders in the present company, or their nominees, *pro rata*, and that an additional share, issued as fully paid-up, be allotted in respect of each such share, so subscribed for as and by way of bonus, and without payment or liability in respect of such bonus share. That any shares not applied for by the shareholders in the present company be offered for public subscription, upon such terms as the directors of the new company may think fit.

MR. RUSSELL LOWELL ON AMERICAN LABOUR AND WAGES.

At the Society of Arts, on Wednesday, Mr. James Russell Lowell, the United States Minister in this country, presided at a meeting, at which Mr. D. PIDGEON read a paper on this subject.

Dealing with the States of New York, Massachusetts, and Connecticut, which contained nearly one-half of the whole manufacturing population of America, Mr. Pidgeon drew a comparison between the condition of the workpeople of American descent in the factories of Massachusetts 40 years ago with that of the same classes since the great wave of Irish emigration after the potato famine swept them from the spindles. Selecting for examination the housing, education, sobriety, and pauperism of the industrial community as a means of testing the social condition of the wage-earning classes, more particularly in Massachusetts, he remarked that whether the present condition of labour in America would ever again be lifted to the levels of the past depended, in truth, less upon the State, the Church, and the school, than upon the part which the American employer was taking or about to take on that question. Among other instances of well-directed efforts to secure this end, he mentioned that the high morality and intelligence of Colonel Barrow's 1600 operatives in the Willimantic Thread Company, the comfort and seemliness of their homes, the cleanly and cheerful character of the mill work, even the refinements of the music and art schools attached to the mill, could be proved, by hard figures, to be paying factors in the undertaking, viewed from a purely commercial standpoint. (Cheers.) Instituting, in the next place, a comparison or the wage earnings of those engaged in 24 leading industries in Massachusetts and in Great Britain, he drew the conclusion that although wages were probably some 60 per cent. higher in the chief manufacturing districts of America than in Great Britain, yet an English artizan would find himself little richer there than at home after paying the enhanced prices for subsistence and conforming to the higher standard of life which prevailed in the States. At the same time, his whole social position and opportunities of advancement would be immensely improved. By reference to a diagram of the fluctuations of wages in the two countries between the years 1860 and 1883, he finally sought to show that the tariff to which the higher wages of America were so confidently attributed had really no influence whatever upon them, and that it was not, therefore, an engine, such as it was glowingly represented to the American artizan, constructed for the purpose of raising his lot above that of the so-called "pauper labour of Europe."

Mr. LOWELL, in the course of his remarks, said :—Perhaps you will not consider me conceited in saying that I think what I do notice in an American workman of purely American descent is the amount of brains that he mixes with his fingers. That has always struck me as compared with the workmen of any other country. I remember one most striking anecdote in Mr. Pidgeon's book. It is that of Colonel Bowes holding up a piece of thread, and saying "That will sustain more weight than any other thread of the same size in the world—and why? Because it was made by more intelligent workmen."—(Cheers.) That reminds me of another point in the book, in which Mr. Pidgeon tells us that American labour has degenerated. I think, perhaps, I can correct that by saying that it is turned in other directions. For instance the labour of Lowell received a great reinforcement in 1852. The factory system began before that, but it then received a great reinforcement of labour from the fact that railways then began to be built in America, and much foreign immigration began. As a consequence, domestic service, which had hitherto been performed by persons of American descent, began to be performed by persons of alien origin, and from that time forward the sons and daughters of our farmers would no longer go out to service. I remember myself perfectly when service was to some extent hereditary. I have in my mind a family in which three generations had served. She is perhaps the last specimen, and perhaps it will interest you to know the family she served in was that of my friend, Dr. Oliver Wendell Holmes. There are one or two points which have interested me in the discussion, and though I cannot properly express an opinion on the subject of tariffs or Free Trade, you will allow me to comment briefly on them. One is the condition, to which Mr. Pidgeon referred, of the French Canadians or *habitans*. I cannot help thinking that any degradation in the French *habitans* must have arisen from the agglomeration and too fierce competition of labour rather than from anything natural to the French *habitans* himself. I recollect perfectly—for these early impressions are exceedingly vivid—that 50 years age last summer, after I had passed my examination on entering college, I took my first independent journey not under the wing of my father, and I chose to go to Canada, which was then more of a foreign country than Europe, singularly foreign, for I have never seen anything in Europe so startlingly foreign to an American as Canada was then. For instance, you passed an unseen border or line of division, and went out of a country of Congregationalists and Protestantism into a country where the Catholic Church had rights such as it hardly has in Europe; where the spires were covered with tin, like the towers Don Quixote imagined he saw on the castles he came to in his wanderings; where you saw the priest in his broad hat, and where I remember being charmed with the village *habitans*. If I had spoken French better, perhaps I should not have been so much interested; but so far as I understood him he seemed a very simple and kindly disposed sort of citizen. I recollect being struck with the breadth of the panes in the windows, and, so far from living in little tumble-down shanties, they almost all of them lived in large stone houses. I remember particularly the whiteness of the little curtains, and when they were drawn with the beauty of the flowers I saw. That is a memory of fifty years ago, but I could not help putting in a word in favour of a population which touched my heart by the simplicity and honesty of its habits and ways. There is one other point to which I should like to call attention, and that is that in estimating the average wages of the agricultural labourer in the United States you ought to take into consideration the fact that since 1865 wages have been paid to a class of agricultural labourers which were never paid before. That would lower the general average of wages throughout the country if you take the Census returns; and, therefore, the statistics from Massachusetts are fairer than are generally supposed. I have been much interested in the discussion that has taken place, and I have been struck with its pertinency. I was very glad to hear the remarks which fell from Mr. Burnett, because I thought them clear, and much to the purpose. But though I cannot express any opinion with regard to Free Trade and Protection, I think I may say what is the opinion of many far-sighted men in England—an opinion which, perhaps, it would be better for me to recall to an English audience—and that is that the moment we adopt Free Trade you will find in all the markets of the world the most dangerous and the most intelligent competitor you have ever met. (Hear, hear.) If I remember my statistics rightly, before 1860 our mercantile marine was almost equivalent in tonnage to yours. I think it is not national vanity, but a knowledge of facts, which leads me to say that our ships were better modelled and better manned than the English ships, so that we were gradually taking away from you the carrying trade by canvas. Our Civil War intervened precisely at the moment when the great change was going on from sail to steam, and from wood to iron; and I am expressing, not my own opinion, but that of long-headed people on this side of the water, when I say that owing to our navigation laws and our tariff you got a start of us in the building of iron ships which we can never overtake. I think I am right also, in saying to an English audience, who always like fair play, that many of our fabrics are more honest than yours. (Hear, hear.) As to that, I remember my amazement some years ago when in Venice. I was going to take a walk, when my wife asked me to buy a piece of what you call calico, but what we call cotton. I went into a shop and asked for some. I was shown some, and was assured that it was excellent, and that it was English—the best in the world. In my innocence I bought it and took it home, but I had bought what would have made a very good sieve after it was washed. (Laughter.) It was heavy and solid, and to my unpractised eye it was admirable, but the moment Mrs. Lowell took it, and after cutting a little notch in it began, as women do, to rip it, the whole room was choked with the dust which came out of it, and she told me that that was an abomination which she had never in her life observed at home. (Hear.) Let me say something with regard to another manufacture, the manufacture of tools. It has been reckoned by statisticians that the mechanics in the United States of English descent are almost entirely descended from emigrants who came over before the Restoration, and that the particular ingenuity which characterises American working men is an instance, to a certain extent, of heredity. They had some of them five, some of them four, and some of them three generations of self-helping ancestors, who were compelled to make up for the want of hands by some adaptation, sometimes more complex, sometimes more simple, of mechanics. I think that that is one of the reasons why the Americans are so remarkably inventive, so ingenious, and so skilful in making the tools with which they perform their labour, for nearly all the labour-saving machines were made on our side of the water.

THE YORKSHIRE MINERS, AND LABOUR REPRESENTATION.

In view of the Seats Bill the important question of shall we have a labour representative or not is being discussed at various trade centres. The mining operatives are particularly on the alert with regard to the question, and on Monday a conference of miners' delegates was held at Barnsley to consider it, when the chair was occupied by Mr. E. Cowey. Speaking of the election of labour candidates to Parliament, Mr. B. Pickard said that it was for them to see that they returned a man thoroughly acquainted with the practical working of mines and with the needs and aspirations of the men engaged in them. Mentioning the very unsatisfactory position which miners occupied at coroner's inquests, he said that on one occasion he was threatened with committal for alleged contempt of court. In order that justice might be done and the culpable negligence of other parties exposed it was necessary that the representatives of miners killed by accident or explosion should have an official standing at inquests, and that evidence should be offered as to their view of the case. He also spoke strongly in favour of the general appointment of stipendiary magistrates, stating that fair and honourable treatment could be obtained from County Court judges. Complaining of the treatment of dismissed men, he stated that an understanding seemed to exist among colliery managers that if a man had been dismissed from one colliery he should not be engaged at another.

Referring to coroner's inquests into mining accidents, Mr. John Frith complained that no matter what evidence it was wanted to offer the opportunity was frequently denied them. The Employers' Liability Act was a very good measure, yet its operation had disclosed certain defects, which ought to be remedied. He referred to the Monk Bretton case, where a deputy had been dismissed, for having reported the presence of gas, and recommended that when improper management or regulations existed the Government Inspector should be communicated with. One of their objects was to secure legislation to prevent explosions and other catastrophies. Dealing with the question of coroner's inquests, Mr. Parrott remarked that coal miners had to work in almost total darkness. It was hard under such circumstances that when a fatal accident occurred the coroners should endeavour to throw a mist over their enquiries. Accidents often originated from the scarcity of timber supplied to the men, but when such mishaps occurred a convenient habit prevailed of filling up the holes with timber during the night before the arrival of the Inspector.

A resolution to the effect that a set of questions be drawn up to be put to the various candidates seeking the suffrages of miners in the several divisions of Yorkshire asking them to pledge themselves to assist in passing into law any Bill bearing upon the subjects embodied in the questions was proposed by Mr. David Burnley, and seconded by Mr. W. Swaine, and unanimously adopted. Subsequently resolutions were passed agreeing to adopt a labour candidate, and that Mr. B. Pickard be that candidate, that a committee be appointed to wait on the Boundary Commissioners to state the case on behalf of the miners.

CLYDE SHIPMASTERS' PROVIDENT ASSOCIATION. — The annual meeting of the members of this association was held this week in the Board-room of the Chamber of Commerce, Greenock (Mr. D. D. Adamson, vice-President, in the chair). The report, submitted by Mr. John Cunningham, the secretary, stated that five annuitants have gone off the roll during the year, making the number now receiving the benefits of the association 89, being two less than the previous year, and there are now 90 members on the roll contributing annually 96*l.* 0s. 6d. The income for the year amounted to 197*l.* 14s. 4d., and the expenditure to 197*l.* 6s. 2d.; and the capital fund now stands at 2718*l.* 13s. 1d. invested as follows:—1250*l.* in the Greenock Harbour Trust, 1250*l.* in the Greenock Town Proper, and 218*l.* 13s. 1d. in the British Linen Company Bank. It is gratifying to your committee to know that the association is still giving help to the widow and orphan to the extent of nearly 200*l.* per annum, and that its benefits are most gratefully received by the annuitants, being considered by them as very helpful in various ways. The Chairman moved the adoption of the report, which was seconded by Mr. Peter Mackellar, and unanimously adopted. On the motion of Capt. Clint, office-bearers for the year were appointed, ex-Provost Lyle being re-elected President, and Mr. D. D. Adamson vice-President. Votes of thanks to the secretary, &c., terminated the proceedings.

MESSRS. TANGYES' WORKPEOPLE.—At some of the meetings of unemployed persons it has been stated that from 450 to 500 men have been discharged by Tangyes (Limited), because of bad trade We understand that the number is greatly exaggerated; indeed, we are informed that, as a matter of fact, only about one-third of the smaller number above-mentioned have left the company's employment, and that only part of the remainder are on short time.

THE EMPLOYERS' LIABILITY ACT.—At the Greenwich County Court on Friday of last week Judge Pitt Taylor and a jury were engaged for five hours in hearing an important case under the Employers' Liability Act, in which John Mozello, a foreman stevedore, claimed 100*l.* damages for injuries received while in the service of the defendant, William Butler, a master stevedore at the Surrey Commercial Docks. It appeared that on Oct. 22 last plaintiff was one of a gang of 10 men engaged in unloading the Danish steamship Magnet in the Surrey Commercial Dock. The freight consisted of timber, and was being taken out of the hold by means of a steam winch, of which a Danish sailor belonging to the ship had charge. The Dane could not understand English, and owing to his incompetence several of the stevedores had their fingers pinched. Plaintiff and another foreman remonstrated with the man for his carelessness, but he only laughed at them. Defendant's son, who was superintending the work of unloading, was appealed to, and the mate of the vessel was told that another man would have to be put on in place of the Dane, but this he refused to allow. On Oct. 24 some timber was being raised when the man in charge of the winch lowered it suddenly, and one of the gang, a man named Birkett, had his shoulder fractured. He was taken to the hospital by defendant's son, and directly afterwards some of the timber in being raised became wedged, and to free it plaintiff tried to move it with his own shoulder, when the winch man again let the timber drop, and one end of it fell on the plaintiff, doubling him up. He was laid up for 12 weeks, and medical evidence showed that he was still unable to do stevedore work. For the defence it was contended that the defendant was not liable, as the Dane in charge of the winch was not in his service, and defendant's contract with the dock company was produced to show that the company had to provide a winch, a winchman, and a donkey-man. His Honour overruled the contention and said that the Dane was in defendant's service at the time of the accident. The jury found for the plaintiff, damages 50*l.*, and his Honour gave judgment and certified for costs.

The name of Mr. T. Bedford Bolitho has been mentioned as a probable Liberal candidate for the westernmost district of Cornwall; but, it is understood, he will not accept the position in any case till Sir John St. Aubyn retires.

THE RATING OF MACHINERY—IMPORTANT APPEAL.

At the recent Northumberland Quarter Sessions, before Sir M. W. Ridley (Chairman), the Rev. Dixon Brown, Mr. J. P. Mulcaster, and Mr. Burden Sanderson, an important appeal in regard to the rating of machinery came on for hearing. The appellants were the Tyne Boiler Works Company and the respondents the Overseers of the Poor of the township of Longbenton and the Assessment Committee of the Tynemouth Poor Law Union. The case, by means of which it is hoped to bring to a final issue the whole question of the rating of machinery, is regarded with considerable public interest. The appellants in the action are being supported by a powerful combination of manufacturers specially formed for testing the law on the subject; while the respondents are also backed by a combination of the Poor Law Unions, which have undertaken to bear a portion of the costs incurred in contesting the appeal.

For the appellants the counsel were Mr. R. T. Reid, Q.C., M.P., Mr. Agril Dodd, and Mr. J. E. Joel (instructed by Messrs. Leadbitter and Harvey, Newcastle); and for the respondents, Mr. R. E. Webster, Q.C., Mr. J. Edge, and Mr. Hans Hamilton (instructed by Messrs. Kidson, McKenzies, and Kidson, Sunderland, and Mr. Shafto Robson, Gateshead).

Mr. REID, Q.C., said it was an appeal against a rate made on June 21, 1884, which had been entered and respited. It was a rate made upon the premises in the occupation of the Tyne Boiler Works Company covering 5100 square yards. The gross rateable value against which they appealed was 590*l.*, and the net rateable value 501*l.* But in order to simplify matters, and to avoid all contention as to details, they had agreed that 280*l.* should be taken as representing the land and buildings, and 221*l.* (the difference between 280*l.* and 501*l.*) as representing a considerable number of pieces of machinery which were used on the premises. It was in regard to this latter sum—the 221*l.* assessed on the machinery—that the appeal was brought; and he might say that although the appeal was confined to this case it was in a very strong sense a test case that was being taken for the purpose of bringing to an issue, as shortly and as speedily as possible, the question as to whether machinery of the description of that used at the Tyne Boiler Works was rateable or not according to law. If he could show that any part of the machinery ought not be rated, there would be a reduction of the assessment.

Mr. WEBSTER: You contend that no part should be rated?

Mr. REID said, roughly speaking, that was so. To rate machinery in a place of business like that of the Tyne Boiler Works, though not absolutely unprecedented, was substantially a complete novelty. It had been done at one or two places where it had perhaps been acquiesced in, but as a general practice it was a complete novelty. Before the statute of William IV., and an early statute of Queen Victoria, when rating was regulated entirely under a statute of Queen Elizabeth, personalty was rateable—indeed, ships were rated, but since those statutes came into force it had been agreed that nothing was rateable except that which came under the denomination of realty. Then the question arose, What was realty, and what personalty; and the greatest difficulty in arriving at a decision on that point had been encountered with regard to what were called fixtures. To give a simple illustration, it was easy to say that a mirror was in one sense a fixture, but nobody would think of rating a mirror. Thus, in some cases, it became a matter of no small difficulty to say what was really rateable and what was not. But the rule for deciding that question had been laid down in certain cases, to three of which we would refer; and he did not think his friend and himself could possibly dispute about the principle of the law, however much they might differ as to its application. The first case to which he drew their attention was that of the Queen *v.* Lee, in which the question of the rating of gas meters in consumers' houses was raised. Deductions were claimed in respect of these meters, retorts, purifiers, and other machinery connected with the Lee Gasworks. It was held that the retorts, purifiers, &c., should be assessed, as they were permanently connected with the freehold; but the meters in the customers' houses, although attached to the mains of the company, and by these to the freehold, were not rated. The retorts, purifiers, &c., were assessed in that case because they were attached to the gasworks, which were a permanent concern, established under an Act of Parliament.

The CHAIRMAN, interrupting, said it was not for that Court to go into the question of what was right law or what was wrong law. They were bound to go by the last guiding case on the question, and to see how far the facts of the present case came within the ruling of that case. If they did that it would give the parties material to go before a higher Court with.

Mr. REID said he did not ask the Court to come to any decision in the sense of overturning any other judgment; but before stating the facts in this case, he wished to clear the ground by showing the view he took of the law on the matter.

The CHAIRMAN: I think you were drawing a distinction between gasworks as being more permanent than boiler-works. The word "permanent" simply means the continuance of the works as a going concern. I want to know whether you mean otherwise

Mr. REID said he really did mean otherwise. "Permanent" was a very ambiguous word, which might mean a great many things. However, he wished to quote the judgment of Justice Blackburn in the case of "Queen *v.* Lee," in which his lordship said:—

"The rule laid down has been that where the things are attached to the premises so as to be the part of the premises, although they are removable afterwards, still they are part of the premises, although there may be a right to remove them. But if a thing or a chattel be merely fixed to the premises, and so far fastened to the premises as to be still a chattel, but fixed and steadied for the purposes of use there, they remain chattels altogether."

Then his lordship proceeded to say there were two things to be taken into consideration:—

"*First*, the mode of annexation to the soil or fabric of the house, and the extent to which it is united to them, whether it can be easily removed *integre, salve, et commode*, or not, without injury to itself or the fabric of the building; secondly—and this is what he was calling attention to, on the object and purposes of the annexation—whether it was for permanent and substantial improvement of the dwelling, in the language of the civil law, *perpetui usus causa*, or in that of the year book *pour un profit de l'inheritance*, or merely for temporary purposes, or the more complete enjoyment and use of it as a chattel."

That he understood to be the principle of the law on the subject, and however they disputed as to its application, he did not think there could be any question as to the principle itself. He next quoted the case of a silk manufacturer at Halstead, in 1868, in which machines fixed to the floor merely for the purpose of being steadied were held not to be rateable. The third case to which he referred was that of Laing *v.* the Overseers of Bishopwearmouth, which concerned the rating of machinery in a shipyard. In that instance the machinery was very similar to that in the case before them, and it was determined that it was assessable to the poor's rate. But he contended that that was a finding on the facts, and not on the principle of law, which he had quoted from Justice Blackburn. The Bishopwearmouth case never came before sessions, but the findings were drawn up and agreed on by counsel. They were drawn up by Mr. Charles Crompton for Mr. Laing, and by his friend Mr. Webster for the respondents. He (Mr. Reid), however, argued that these findings were incorrect, inasmuch as they stated that the machinery was intended to be permanently used in the shipbuilding and repairing yard, when in reality it could have been easily removed, and was a description of machinery that was frequently removed, without injury to either the premises or to the machinery itself. He need not say that they were desirous of having the law on this question settled once for all. It was a question of enormous importance, for it was obvious that whether machinery was or was not to be rated was an issue which affected everybody all round. He, therefore, wished to avoid all ambiguous expressions, such as the word "permanent," which precluded them from having the real facts brought before the Court. The learned counsel then proceeded to describe the machinery of the Tyne Boiler Works Company, which it was proposed to rate. That machinery, he said, might be put into two classes—power and machines. The latter was of much more importance than the former, and it was that which had brought them into Court; but at the same time, while he contested one he would also contest the other. The principal machinery consisted of punching, slotting, drilling, and rivetting machines, by means of a model and photographs he showed that these were in some cases steadied only by their own weight, and in others screwed on to concrete beds. In no case could they be said to be permanently annexed to the premises. The machines were separate and distinct from each other. They were movable at will by being taken down and put up, either for repairs or rearrangement, or on account of any change in the use of the building. They could be removed without damage or injury either to the building or to themselves, and they were commonly bought and sold, renewed or removed as chattels. They were, in fact, annexed by the tenants, which was the custom of the district. In the case of the Queen *v.* Lee, the object and intention of the annexation was dwelt upon by Justice Blackburn as a most important feature, and in this case the annexation, where the machines really were annexed, was simply for the purpose of steadying them and preventing them from being injured by the vibration. These were the facts so far as concerned the machinery. In a very short space of time the premises had been used for no less than four different kinds of industry—as chemical works, as a shipbuilding yard, as an engineering yard, and now as a boiler-making works. It was manifest in these circumstances that the pieces of machinery were only chattels, and that however they were annexed or attached there was never any intention of making them part of the freehold, or of doing anything for the purpose of benefiting the inheritance. In the Bishopwearmouth case there was an expression used with regard to "enhancing" the property. But the presence of machinery in a building could not enhance the value of the realty; it only enhanced the undertaking as a business concern, in the same way a picture by Raphael might enhance the value of an art exhibition, though it did not enhance the value of the freehold of the picture gallery.

Mr. WILLIAM BOYD (of the Wallsend Slipway and Engineering Company) said he, in conjunction with other partners, was a tenant of the premises now occupied by the Tyne Boiler Works from 1868 or 1869 to 1874. A portion of the machinery at present in the works was placed there in his time. The reason why the machines were attached to the floor was merely to keep them steady, and they were frequently removed from one place to another in the shop. He had seen the whole of the machinery now in the works, and the same description applied to it It was all machinery that could easily be moved about without injury either to the building or to the machinery itself.

Cross-examined by Mr. WEBSTER: His firm—the Wallsend Slipway Company—were members of the combination contesting the present appeal. The photographs produced were correct representations of the various machines, and showed the manner in which they were attached to the premises. He admitted that the east wall of the works, to which the shafting was attached, was thicker than the west wall, and was also buttressed at intervals, and agreed that it was most likely this had been done in order to meet the greater strain consequent upon its having to bear this shafting. There was not a machine in the place that was not easily applicable to other industries. There were one or two machines which they could do without. They could substitute hand labour for the rivetting and drilling machines, but not for any others that he could remember.

Mr. NICHOLSON, manager of the Tyne Boiler Works, gave similar evidence to that of Mr. Boyd.

Mr. JOSEPH POTTS, rating valuer and surveyor, Sunderland, said so far as his knowledge and experience went in this immediate neighbourhood, the rating of machinery began about 20 years ago, and at that time, in conjunction with Mr. Thomas F. Hedley, of Sunderland, he valued machinery connected with manufactories for rating purposes. He did not know what was the general practice throughout England at that time. Previous to 20 years ago he believed only land and buildings were rated. The rating of machinery began after that time, he believed, on a suggestion by Mr. Hedley that they should take the capital value of the machinery, add it to the value of the land and buildings, and rate the whole. He might be mistaken in this, but he believed it was so. He corroborated the statements of the last two witnesses that the machinery in the Tyne Boiler Works was attached merely for the purpose of steadying it. It was the practice in this district that this class of machinery was invariably annexed by the tenant.

Cross-examined by Mr. WEBSTER: He knew that Mr. Hedley was unfortunately too ill to attend that day to give evidence. Before commencing to value machinery for rating purposes 20 years ago, he had not himself investigated the practice in other parts of the country, and he was not aware that Mr. Hedley had done so, but he had since learned from the law reports that machinery had been rated 40 or 50 years ago. He had written to the newspapers advocating the manufacturers' side in this question against the rating of machinery.

Mr. REID said if the respondent did not dispute the facts as they had been given by the witnesses, he would not propose to give any further evidence, and Mr. WEBSTER said he did not propose to call any witnesses.

Mr. WEBSTER, Q.C., then replied on behalf of the respondents. He said it was idle to contend that any new question had been raised that day requiring a case to be stated. There had been no new facts given, and whenever the question had been raised during the last 40 years the decision of the Court of Queen's Bench had been in accordance with the decision in the Bishopwearmouth case. He referred the Court to the finding drawn up in the Bishopwearmouth case, and pointed out that many of the machines therein mentioned were identical with the machines that had been described by the witnesses that day. So far from resting on any special statements, as was contended by Mr. Reid, it rested on the facts as to what the machinery was. In these findings every point taken by his friend that day was set forth—that the machinery could be taken out and used in any other factory, and that the removal of the bolts had nothing whatever to do with the freehold or the construction of the machinery itself. In that case there was quite as many—indeed, a good many more—machines resting on their own weight, as in this case. The argument with regard to the word "permanent" had been exaggerated to a most extraordinary extent. All that was ever said about permanence was that so long as there was a shipyard there, so long would the machines be there; and it was with that object that he asked Mr. Boyd that morning to tell him any machine that could be taken away consistently with that yard being used as a boiler yard, when Mr. Boyd was obliged to admit that except the drilling and rivetting machines, which might be substituted by hand labour, he could not mention any other machine that could be taken away; therefore, the word "permanent" in the Bishopwearmouth finding only meant so long as the machines were needed for the purposes of the shipbuilding yard. The question for the Court was not whether the machinery was rateable, but whether the machinery and plant were to be taken into consideration as in any way enhancing the hereditaments included in the assessment; and he contended that that was the only form in which the question could be put to the Court. The learned counsel then proceeded to quote from several cases which had been decided before the higher courts in favour of his argument, and argued that it was immaterial whether the machinery belonged to the landlord or tenant so far as its liability to be rated was concerned.

Mr. REID replied on the law of the case, and contended that the preponderance of the authority of the higher courts was in his favour. The principle that chattels were not rateable, he said, was undisputed, and, according to the decision in the Queen *v.* Lee, the Tyne Boiler Company had a right to have their machinery exempted from the rating assessment. Part of the premises or not part of the premises was the question which was debated through the whole of the judgment, and in this case the machinery was clearly not part of the freehold. The authorities on the subject were contradictory; and even if the bench were against him he trusted they would give him a case for a higher court, in order that they might ascertain which was the right law on the subject.

The CHAIRMAN, after a short consultation, said the bench did not entertain the shadow of a doubt that this property had been properly rated, they were unanimous on that point, but they had a difficulty with reference to Mr. Reid's request for a special case. They were anxious to meet the convenience of all parties, but it seemed somewhat strange to state a case as to whether they were right or not on a point on which they had no doubt.

Mr. REID said they were anxious to take the case to the House of Lords, and it was a question on which depended millions and millions of money.

The CHAIRMAN said it was only a question in what way it was to go to the higher Court. He was anxious to facilitate the procedure.

Mr. REID said he had no objection to the Court saying that they had no doubt as to the law themselves; but that, considering the desire of the parties to take it to the Court of Appeal, they had consented to state a case. Then at all events no one could suggest that the Court was acting improperly.

Mr. DODD: There are other cases in the South of England awaiting this very case.

Mr. WEBSTER: Where is that?

Mr. DODD: One is at Doncaster. It was put off that this might be taken up.

Mr. REID: If you state a case we will accept the responsibility. If our clients are wrong we pay costs.

Mr WEBSTER: We will leave it entirely with the bench.

The CHAIRMAN: Then we shall certainly agree to state a special case, and we can do so on the extra ground that the former case was argued on an agreement, without coming into Court.

On the application of Mr. WEBSTER the appeal was then formally dismissed with costs.

MINISTER OF EDUCATION FOR SCOTLAND.—At a general meeting of the Glasgow Branch of the Educational Institute of Scotland, on Jan. 17 (Mr. John Lochore in the chair), a lecture was delivered by Prof. Calderwood, the subject of which was "The Teachers' Idea, and the Obstacles to its Attainment." The Chairman, in introducing the lecturer, intimated that at the close of the lecture the meeting would be invited to take up the question of a Minister of Education for Scotland. The lecturer then stated that the ideal of the teacher was the same through all the diversities of professional life. It was to develope the mind and character in everyone under his care, and its ultimate end was to contribute to the value of the life which passed from under its influence. The diversities of primary, secondary, and higher education lost themselves in view of the one common and lofty end contemplated by teachers. He warned his hearers against the narrowing influence of specialism on the mind of the specialist. Speaking of over-pressure, he said the evidence before the country was to the effect that over-pressure was not so common as was supposed, and the elementary schools of our great cities showed that the fault was under-feeding rather than over-pressure. What they wanted was to get the ideal for School Boards made higher and kept higher. The difficulty was to get men who understood what the duties of a School Board were, and who would take the necessary trouble and interest in encouraging educational work. At the close of the lecture a vote of thanks was proposed to the lecturer. After referring at some length to the misunderstanding that had arisen in some quarters as to the resolution of the Ayr Congress, Mr. E. Boyd, of the Free Church Training College, moved—"That this Congress is of opinion that the time has come for the appointment of a Minister of State who shall have charge of English and Scotch education; further, that the Congress is of opinion that the educational interests of both countries will benefit by keeping the English and Scotch Educational Departments separate and distinct, each under its own permanent secretary, who shall be responsible to the Minister of Education," which was seconded by Mr. Routledge, and adopted unanimously. A deputation was appointed, consisting of Messrs. Miller, Davidson, Laidlaw, and Boyd, to make known the views of the Institute in the proper quarter.

ADVANCE IN RAILWAY RATES.—A meeting of the committee of the Iron and General Metal Trades' Section of the Liverpool Chamber of Commerce was held on Monday, to consider the question of the proposed reclassification and advance of railway rates and charges. The following resolution was adopted:—Resolved: "That the committee of the Iron and General Metal Trades' Section of the Liverpool Chamber of Commerce having learned that the leading railway companies intend to bring forward bills in Parliament altering the existing rates of carriage, desire to express their opinion that any advance in the rates of carriage would be fraught with the most serious consequences to manufacturers of iron and tin-plates, many of whom are already suffering considerable losses from the low prices ruling. That the exceptionally low prices of steel-rails, and their greater durability, (which must represent a very important saving in renewals), coupled with the reduction effected of late in working expenses, should fairly entite the iron trade to some relief from the present high and oppresive railway rates. That the committee would draw especial attention to the inequitable character of the railway charges on sea-borne goods from the Continent, in consequence of which German and Belgian iron is enabled to compete on exceptionally fovourable terms with iron of English manufacture."

Messrs. W. FALLOWS and Co. say that the year 1884 was very unsatisfactory to those engaged in the iron trade. It will be remembered as a period of prolonged and unrelieved depression, coupled with considerable contraction in the volume of business and a further fall in prices. The cause is not difficult to discover. For many years past the iron trade of the world has been subject to periods of expansion and contraction, mainly due to those sudden outbursts of railway extension so common in the United States, and it can only be hoped that the severe experience of the past may prevent a repetition of similar mistakes in the future:—The following figures will illustrate the foregoing statement:—Production of pig-iron in the world—1868, 9,392,165 tons; 1872, 13,906,000 tons; increase, 48 per cent.; 1879, 13,768,000 tons; 1883, 20,410,000 tons; increase, 48 per cent. New lines of rails in United States, 1868 to 1872, 26,921 miles: 1879 to 1883, 39,775 miles. During these two periods (of five years each) more than one-half of the total mileage of the United States was laid. The total mileage at the close of 1883 was 121,425 miles. We are now passing through the period of contraction, and this has been especially severe in the United States during the past year. Mr. Swank, the secretary of the American Iron and Steel Association, estimates that the production of 1884 will be about the same as 1880, which was nearly 1,000,000 tons under that of 1883. Although a considerable number of furnaces were blown out in the United Kingdom in the latter half of 1883, it was not till last year that any very marked diminution of the production took place. We estimate that the output of pig-iron would not exceed 7,700,000, against 8,490,224 tons in 1883. This reduction was due to a falling of in exports amounting to over 500,000 tons (mainly pig-iron and steel rails) and to the depression in shipbuilding. Assuming that the tonnage built last year was about 800,000 tons, compared with 1,329,694 tons in 1883, this would represent about 350,000 tons less iron and steel consumed in the shipyards and engineering establishments of the country.

The following particulars are taken from the annual circular issued by Mr. J. Westwood Thompson (successor to Mr. G. de Quetteville):—The total shipments of specie from Gravesend by the Peninsula and Oriental steamers to the East during 1884 were 11,221,598*l.*, of which 3,252,340*l.* was in gold, and the remainder in silver, against a total of 8,117,525*l.* in 1883, showing an increase of 3,104,073*l.* From the Mediterranean ports they were 566,198*l.* (193,588*l.* gold and 371,610*l.* silver), while the export by the Messageries Maritimes during the same period were 1,062,772*l.* (735,285*l.* gold and 327,487*l.* silver), showing an increase of 406,624*l.* in the one case, and 176,089*l.* in the other.

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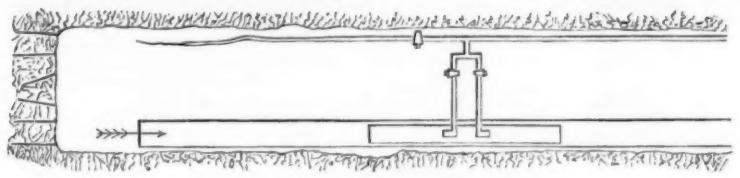

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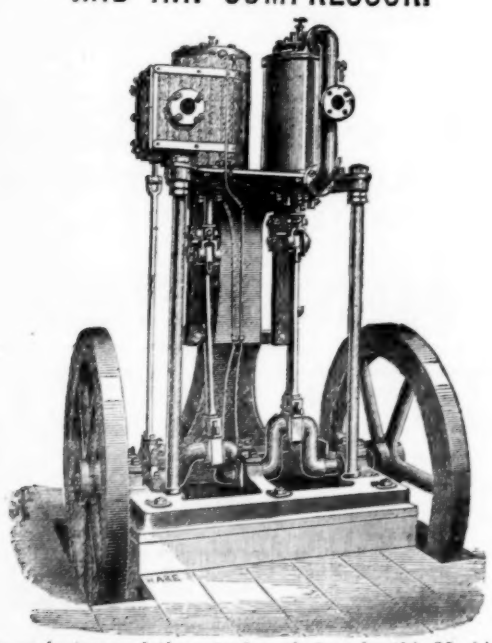

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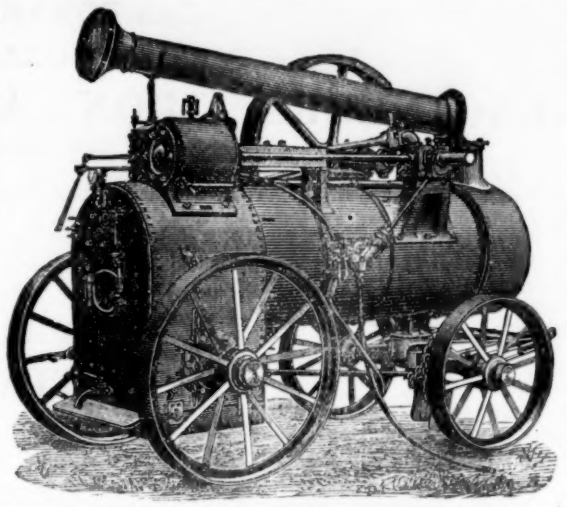

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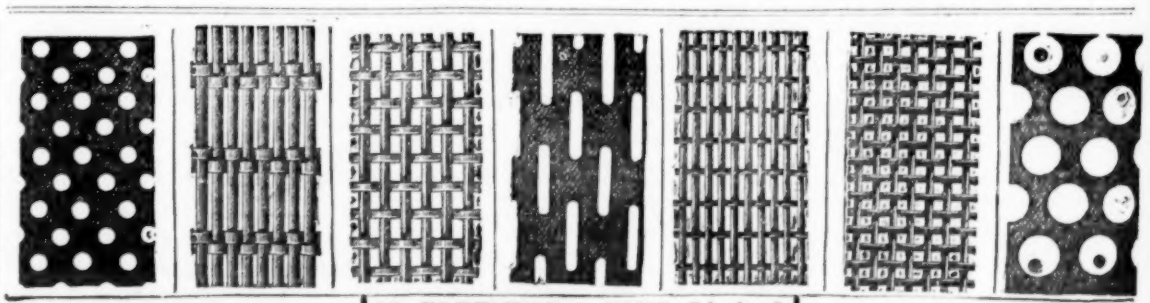

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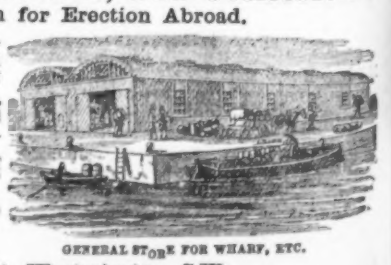

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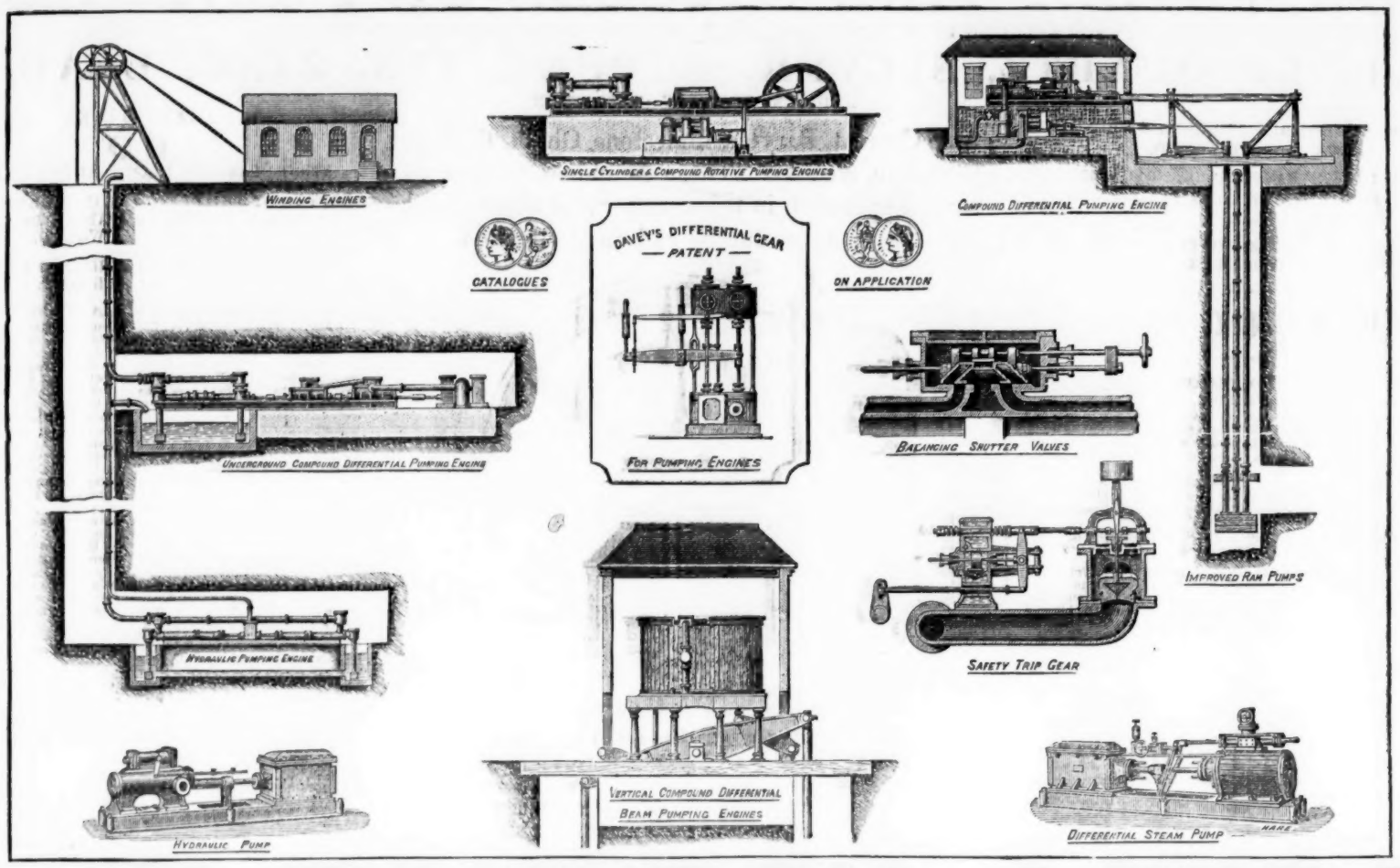

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It saves money and trouble, but like my gas purifying oxide it lasts so long that you must not expect another order from me for twelve months at least.

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Mr. J. Bell. G. H. CLARKE, Sup. Engineer.

Department of the Director of Navy Contracts,
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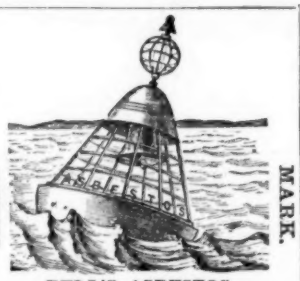
I am, dear Sirs,
Yours faithfully,
THOMAS WINTER, Colliery Engineer.



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BELL'S ASBESTOS BOILER AND PIPE COVERING COMPOSITION, for coating every class of steam pipes and boilers, non-combustible and easily applied when steam is up; adheres to metals and preserves them from rust; prevents the unequal expansion and contraction of boilers exposed to weather; covers 50 per cent. more surface than any other coating, and is absolutely indestructible. It can be stripped off after many years' use, mixed up with 20 per cent. of fresh, and applied again. The composition is supplied dry, and is only to be mixed with water to the consistency required for use.

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